REFERRAL PATTERNS TO THE RED CROSS WAR MEMORIAL CHILDREN'S HOSPITAL

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I, PETER IRWIN LACHMAN hereby declare that the work on which this thesis is based is original (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other University.

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Peter Lachman
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8th May 1989
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(Date)

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SUMMARY

This prospective descriptive study describes the referral patterns to the Red Cross War Memorial Children's Hospital. The study was conducted from 1st July to 31st December 1987 and entailed the collection of all referral letters presented (9288) to the hospital and the analysis of a sample of these letters (4702).

The results indicated:

* The patients are similar in terms of age and sex to those attending the Outpatients Department except that relatively fewer referred patients are Black.
* The private sector, i.e. general practitioners, is the largest referral agency followed by Day Hospitals.
* Most patients were referred to the Outpatients Department without an appointment.
* Of the specialist clinics, the surgical clinics, i.e. Ophthalmology and Ear, Nose and Throat Clinics, were utilised the most.
* The majority of patients (84,90%) were not admitted.
* The contact made by the hospital with referral agents was poor (only in 30,30%).
* The quality of information in referral letters was generally poor and did not contribute to patient care.

Recommendations are made to the hospital and relevant health authorities.

CHAPTER 1 - INTRODUCTION

The method of providing health care in a developing country is a contentious issue. There is a need to aim for 'health for all' but at the same time there is the need to provide specialised care for those who require it. The Alma-Ata declaration on Primary Health Care stressed that, in order to attain the goal of health for all, co-ordination of all sectors of health services is essential. With particular reference to the role of the hospital the report recommended that '...all levels of the health system support primary health care by facilitating referral of patients and consultation on health problems; by providing supportive supervision and guidance, logistic support, and supplies; and through the improved use of referral hospitals.'[1]

In order to attain the goal of comprehensive health care for the entire population in a region, it is mandatory that the provision of health care to the population be constantly assessed from all aspects. The hospital has a particular responsibility to the community in that it is the most expensive part of the health service. It must therefore aim to provide the service for which it has been designed. This implies a clear definition of its role in the health care system and a regular assessment of that role. The hospital must not be viewed as a rival to

primary health care services. Rather, the hospital must complement the primary health services and concern itself with the health of the community.

The aim of health planning is to 'determine the volume, structure and distribution of a system that is capable of meeting the population's needs.'[2] It is thus evident that for a hospital to function appropriately regular evaluation of the service it provides is necessary. With the rapid urbanisation that has occurred in Cape Town over the past decade, and the gradual relative decrease in funds to finance the health care of the increasing population the assessment of the role the academic referral hospital plays is of great importance.

Child health care in the Western Cape is structured as follows:

1. Preventive services provided by local authority polyclinics

2. Curative services as follows:

    a. Primary[3,4, 20] and secondary care provided by day hospitals (Metropolitan Cape Town) and regional hospitals (see Appendix for definitions)

b. Tertiary care provided by the Paediatric Departments of the Red Cross War Memorial Children's Hospital (RCWMCH) and Tygerberg Hospital (TBH).

The private sector complements the above by means of general practice and specialist paediatric services.

Although the RCWMCH and TBH were designated as tertiary care centres by the provincial health authorities, the distinction between primary, secondary and tertiary curative health care services has become blurred and these tertiary care centres are being used for all levels of child health care.

At present the RCWMCH functions:

1. To provide specialist care not available at other health centres, including provision of procedures and technical facilities

2. As a training centre for varying categories of child health professionals, e.g. doctors, nursing staff, allied health care professionals

3. To provide primary and secondary health care to the community in its proximity (i.e. Metropolitan Cape Town), and even further afield, e.g. Transkei.

The planning of an appropriate child health care system for implementation in the Western Cape requires a clear definition of the role of each health tier. With the demographic changes that have occurred the reorganisation of the health care system in the region is essential. This was given some recognition by a committee appointed by the Provincial Administration of the Cape Province[5] in 1975. At that time it was suggested that appropriate utilisation of the health services requires improved primary health care facilities, decentralization of secondary health care facilities and therefore more appropriate utilisation of the tertiary centres.

The number of patients seen at RCWMCH Outpatients Department (OPD) in 1986 was 262,083[6]. In 1987 the number was 267,465[6].

In a retrospective analysis of RCWMCH statistics in 1985, Deeny[7] noted that 60% of all patients seen in OPD were self-referred and 33% were generated from the hospital itself. The remainder were referred by outside health agencies.

The focus of this study is an analysis of referrals from outside agencies to RCWMCH for the period 1st July to 31st December 1987, i.e. on 7% of the total number of patients attending the Outpatients Department.

One may argue that the study of a mere 7% of the patients that present to the hospital is not a worthwhile exercise. However this 7% does reflect in part the relationship that the hospital has with the rest of the health care system. A study of the patient population that is self-referred would complete the picture. The study of referral patterns to hospitals is of extreme importance in the assessment of the relationship between the hospitals and the health care providers in the community. The aims of this would be to define the role the hospital should play, and to decrease the load on the hospital by strengthening the methods of referral to and from the hospital.

Several studies have been undertaken in the United Kingdom with the aims of examining general practitioner referral rates to hospitals and the reasons for high and low rates. The purpose of all of these studies has been to attempt to explain the reasons for the referral of patients to hospital so that intervention could be made to improve care in the community, and decrease the burden of care on the hospital. A problem of these studies is that they concentrate on general practitioners thereby excluding

other health care providers. Furthermore the results pertain to the particular structure of a developed society and thus the results would not necessarily apply to a developing society such as that in South Africa.

The structure of general practices and the National Health Service in the United Kingdom facilitates the determination of referral rates to hospital, though Marinker et al[8] and Roland[9] indicate the difficulty in interpreting rates. This is a major flaw in the studies available for review. To determine rates one requires a count of all referrals which will need to be uniform if there is to be comparison of rates, e.g. some studies such as that of Gillam[10], exclude 'acute' referrals, while others include them.

There may be different reasons for referrals. This is particularly true in a society with uneven distribution of health care facilities, where different agencies may not be comparable. In addition, to determine rates one also requires an accurate denominator. The denominator to be used is contentious - in the United Kingdom one has the 'general practice list', which is not available in South Africa. One could count the number of consultations over a defined period of time or the number of patients in a geographical area. However rates are not absolute and, as Gillam[10] notes, there is not a 'correct' rate and a low

rate may indicate undertreatment as much as a high rate may indicate overtreatment.

Thus to compare the studies undertaken in the United Kingdom to each other is difficult as all utilise different definitions and methods for determining referral rates. It is also questionable whether the studies in the United Kingdom are relevant to a developing country. Pritchard points out that referral 'is an interaction between the doctor's perception of his role, his perception of the patient's need for referral, modified by his own anxiety or lack of resources, and pressure by the patient in response to his own perceptions and anxieties.'[11] The balance between these factors will vary in different societies. In a developing society the lack of facilities and expertise in the primary health care sector plays an important role.

Factors that have been postulated to influence rates[12,13,14] include availability of services, size of practices, experience of the primary health agency, proximity to hospital, and disease profiles to name but a few. Cummins[15] suggests that general practitioners and health agencies have a 'referral threshold' above which referrals are made - a characteristic unique to the individual doctor or sister. In this study the age and experience of the doctor were not considered. The

determinants of this 'threshold' are not elucidated but are probably due to personality traits. It would be useful to determine the factors determining referrals as this would enable intervention to be planned and implemented. However this is an elusive ideal as noted by Roland[9]. As Wilkin and Smith[16] note, variations in referral rates are difficult to explain.

The importance of studying referral rates has been emphasised by Marinker et al[8]. The aim generally is to reduce unnecessary referrals and to increase specificity of referrals. This implies that we must determine a norm for referral and aim for that norm. Once the norm has been determined and a referral agency rate has been determined, then intervention must be designed to decrease or increase rates of referral to the accepted level. However they fail to indicate how this is to be achieved.

It is clear that the norm that is determined must be a reflection of the local conditions and thus the norm for referral in Cape Town may differ from that elsewhere in the country and abroad. Each hospital would have to determine a mode of referral based on the resources available in the community and the facilities available at that hospital[17].

In an extensive search of the literature via Medline Search over 30 years and Index Medicus over 10 years no studies

(besides the British studies) similar to the present one were found. There does not appear to be a study of referrals to a paediatric hospital either in South Africa or in the international literature. A manual search of the publications of the World Health Organisation ('WHO Chronicle','WHO Forum', 'WHO Technical Reports') from 1970 to 1989 failed to produce a published report on referrals to hospitals. There have been some reports on referrals to specific paediatric clinics[18,19], but none to an entire children's hospital. It is thus difficult to compare the results of this study with other completed studies. Furthermore the nature of the study makes it difficult to determine rates as the denominators will be unavailable, and if available are unreliable.

The current procedure at RCWMCH

At RCWMCH the procedure for referred patients is as follows:

1. Patients with medical conditions are assessed by a medical officer -

    a. Patients requiring urgent admission are then referred to the medical registrar in Medical Outpatients Department (MOPD)

b. Patients with diarrhoeal disease who require admission are referred to the diarrhoeal disease ward (Ward A9)

c. Requests for specialised services, e.g. EEG, are referred to the appropriate services

d. All other patients with medical conditions are referred to a specialist clinic on weekdays. If there are too many patients referred in this way, the overflow may be seen by medical officers in MOPD. On public holidays and weekends all these patients are seen by the medical officers.

2. Patients with surgical conditions are seen at the Surgical Outpatient Department (SOPD).

3. Patients with trauma are seen at the trauma unit.

The Problems

The problems that exist at the hospital under review are universal and have been defined by the World Health Organisation.[20]

* The referral hospital is overloaded with patients who could be managed in the community.

* Referred patients are referred unnecessarily to the hospital.
* Patients often bypass the primary health care facilities and present directly to the hospital.
* The lines of communication between the different health sectors are poor.
* There is no defined referral system for the hospital.

Aims

The aims of the study were:

1. To provide data that will enable health care planners and authorities to plan appropriate action in order to improve the health care of the child population of the region.

2. To provide hospital authorities with a profile of referred patients and what happens to them in order that the hospital response can be improved.

Objectives

The objectives of the study were:

1. To define the patterns of referral to RCWMCH over a six month period by means of:

1.1 Determining which agency refers the patients to RCWMCH

1.2 Determining the reasons for referral as stated in the referral letter

1.3 Assessing the appropriateness of the referral (with RCWMCH diagnosis as the 'gold' standard):

- relative to the condition of the patient
- with reference to the facilities available in the geographical area of presentation.

2. To identify those geographical areas, hospitals and health care agencies with high numbers of referrals. This will provide the basis for future intervention studies.

3. To determine whether patients were sent home, admitted to the overnight ward or admitted to hospital during the study period.

4. To establish the hospital response to the referral in terms of communication with referral agencies.

5. To suggest recommendations relating to the need for intervention to:

- RCWMCH administration
- health care planners
- referral agencies.

CHAPTER 2 - METHODOLOGY

The study was a prospective descriptive study conducted from 1st July 1987 to 31st December 1987. A pilot study was conducted in July 1986 by Jacobs et al[21] and is summarised in Appendix 2.

2.1 Collection of Referral Letters

2.1.1 There are two admission offices at RCWMCH. All patients seen at the hospital are issued with their folders at these offices.

2.1.2 A photocopying machine was installed at each admission office. The admissions officer photocopied the letter of every patient referred in the study period.

2.1.3 The photocopied referral letters were stamped with the date and time of arrival, and labelled with a standard hospital sticker, indicating:

- name
- date of birth
- hospital number
- race
- sex

2.1.4 Sealed referral letters directed to a particular person were recorded in a book. For each of these a hospital sticker was retained. These folders were subsequently traced and the referral letters photocopied after the consultation.

2.2 Coding of Data

2.2.1 All letters were coded to show:

- Name
- Date of birth
- Date of referral
- Date of presentation
- Referral agency
- Clinic to which referred
- Geographical area of referral agency[22]
- Geographical area of patient's residence[22]

2.2.2 For the first three months of the study all letters were included in the coding (as in 2.2.1). A total of 4987 letters were coded. It was found that this task was extremely time consuming and in consultation with the

Medical Research Council biostatistician it was decided to limit the coding of basic data to the predetermined specified days for the subsequent three months. When the data was analysed it was analysed in a manner to determine whether this would affect the result and this was not the case.

2.2.3 After consultation at the hospital a sample of folders was recalled. A representative sample of days was chosen for the folder review. The sample was selected by the Medical Research Council biostatistician (See Appendix 3). The sampling was aimed at minimising the effect on the study of seasonal variation, weekends, public holidays, nights and current events in the community.

The letters were coded as follows:

- Whether this was the patient's first visit to the hospital or not
- Referral diagnosis as per ICD 9[23] (where available)
- Hospital diagnosis as per ICD 9[23]

- Requested procedures performed as per WHO classification[24]
- Outcome of consultation, i.e. what happened to the patient
- Contact between hospital and referral agency, i.e. letter or telephonic contact
- Person consulted, i.e. registrar, medical officer, consultant, technician

2.2.4 In order to assess the quality of the referral letters a grading system was devised based on one used by Forsyth and Logan[25]. The grading system was designed to eliminate subjective analysis of the referral letters as far as possible. This system took into account the basic data that is considered to be necessary for the ongoing care of the patient after referral. The following attributes were considered to be necessary in all referral letters.

History : details of the patients past and present medical history relevant to the current presenting condition.

Examination : details of the findings made on examination of the patient by the referring agent.

Diagnosis : whether the referring agent indicated a diagnosis or not.

Investigations: whether the referring agent reported that the appropriate available investigations had been performed or not. For example, if a patient was referred for the treatment of a urinary tract infection, a urine "Dipstix" would be reported as the appropriate investigation. For a patient referred for investigation of anaemia, a fingerprick haemoglobin would be the appropriate investigation.

Treatment : whether the referring agent reported the administration of any treatment to the patient or not.

The grading was:

Present : i.e. the detail reported was in compliance with the standard set out above.

Incomplete : i.e. there was an inadequate reporting of the attribute as per the standard set out above.

Absent : i.e. there was no indication in the referral letter of that attribute at all.

The assessment of the letters was undertaken weekly and was performed only by the researcher in order to eliminate possible inter- researcher bias.

2.3 Personnel

2.3.1 Coding of letters under 2.1.1 was done by a trained research assistant who had previous research experience.

2.3.2 Coding of specified letters was done by the researcher.

2.3.3 Overall supervision was maintained by the researcher. The research assistant supervised the letter collection.

2.4 Supplementary Data

For one month prior to the commencement of the study all letters were photocopied but not analysed. This provided the following information:

- validity of sample size
- feasibility of data collection
- problems with data collection
- logistical information.

2.5 Processing of Data

Processing of computer coding sheets was undertaken by the Institute for Biostatistics, Medical Research Council on an IBM mainframe computer. Analysis of the data was done on an IBM mainframe computer. The software used was SAS, a commercially available statistics software package.

2.6 Ethics

The research protocol was submitted to the Ethics and Research Committee of the University of Cape Town for their approval. The major ethical problem was whether the photocopying of referral letters represents a breach of patient confidentiality. It was decided that this would not occur for the following reasons:

2.6.1 All unsealed letters were opened at the Admissions Office by the clerk on duty. This was normal procedure.

2.6.2 Sealed letters were photocopied only after the patient had been treated.

2.6.3 All letters became part of hospital records and the hospital administration had agreed to the use of these records.

Approval by the Committee was granted.

2.6 Hospital Administration Approval

Approval had been granted by the Medical Superintendent of the Red Cross War Memorial Children's Hospital.

CHAPTER 3 - RESULTS

The study provided information on the patients referred to the hospital, the referral agencies who refer to the hospital, the hospital response to the referral agents, the outcome of consultation and the types of letters that are written.

1. COMPARISON OF DATA SETS

As noted in the methodology for the first three months of the study all letters were coded for basic data, i.e. patient profile and referral agencies. Letter analysis was completed only for the preselected days. A total of 4,702 were thus entered in the study. In consultation with the Medical Research Council biostatistician it was decided to code for specified days only during the last three months of the study. As shown below this did not influence the results. Two tables are shown, though all basic data was checked.

Table 1 - Comparison of Sex and Race of Patients in the two study periods

	July-Sept		Oct-Dec	
	Number	%	Number	%
Coloured male	2075	43,96	252	41,38
White male	250	5,30	26	4,27
Black male	363	7,69	49	8,05
Coloured female	1566	33,19	215	35,30
White female	122	2,59	14	2,30
Black female	343	7,27	53	8,70
Total	4719	100,00	609	100,00

Table 2 - Comparison of Referral Agencies in the two study periods

	July-Sep		Oct-Dec	
	Number	%	Number	%
General Practitioner	1902	46,86	298	49,42
Day hospital	1023	25,20	120	19,90
Provincial hospital	409	10,08	51	8,46
Local authority	414	10,20	83	13,76
Specialist	48	1,18	17	2,82
Other	263	6,48	34	5,64
Total	4059	100,00	603	100,00

Therefore the results presented will be for the two parts of the study combined.

2. PATIENT PROFILE

9,288 patients were referred to the hospital in the six months period 1st July to 31st December 1987. This represents 6,90% of the patients seen at the hospital during that period (136,412 patients were seen in Outpatients from 1st July - 31st December 1987; 267,465 patients were seen from 1st January - 31st December 1987.

Table 3 - Age at Presentation

	Number	%
< 1 month	255	4,80
1 - 12 months	1306	24,70
> 12 months - 60 months	2111	39,90
> 60 months	1621	30,60
	----	------
Total	5293	100,00

Table 4 - Sex of Patients

	Number	%
Male	3015	56,60
Female	2312	43,40
	----	------
Total	5327	100,00

Table 5 - Race of Patients

	Number	%
Coloured	4107	77,10
Black	808	15,10
White	412	7,80
Unknown	44	0,80
	----	------
Total	5371	100,00

The age, sex and race of the patients given in Tables 3 - 5 indicates that the majority of the referred patients were under 5 years of age, male and mostly Coloured.

Table 6 - Previous Visit to Hospital

	Number	%
Previous visit	477	46,20
First visit	556	53,80
Total	1033	100,00

Table 6 shows whether the patient had visited the hospital before or not. The new patients, i.e. patients who had never been to the hospital previously, were about half of the study population.

Table 7 - Month of Presentation

	Total number in outpatients	Number in study	%	
July	23301	1672	35,10)	All
August	22560	1535	32,20)	
letters				
September	22891	1555	32,30)	coded
	Total	4762	99,60	
October	23587	204	33,50)	
Selected				
November	23132	246	40,40)	days
December	20941	159	26,10)	coded
	Total	609	100,00	

The distribution of patients by month is similar, (Table 7) though there is a slight fall off in December, when there are a number of public holidays and a decrease in general attendance in the Outpatient Department.

Table 8 : Geographic Area of Patients' Residences

Area Number		All Patients		Cape Town	
		Number	%	Number	%
A	Bellville	52	3,92	52	4,67
B	Elsies River	84	6,34	84	7,55
C	Maitland	40	3,02	40	3,59
D	Milnerton	17	1,28	17	1,52
E	Atlantic Suburbs	14	1,06	14	1,25
F	Cape Town	36	2,72	36	3,23
G	Southern Suburbs	18	1,36	18	1,61
H	Athlone	102	7,70	102	9,17
I	Langa	20	1,51	20	1,79
J	Heideveld	60	4,53	60	5,39
K	Guguletu	102	7,70	102	9,17
L	Hanover Park	97	7,32	97	8,72
M	Lotus River	41	3,09	41	3,69
N	False Bay	38	2,87	38	3,41
O	Retreat	97	7,32	97	8,43
P	Mitchells Plain	237	17,89	237	21,31
Q	Khayelitsha	57	4,30	57	5,12
R	Rest of 01 Region	139	10,49		-
S	Rest of Cape Prov	74	5,58		-
	Total	1325	100,00	1112	99,62

The data on residential areas is influenced by the racial distribution of the sample. Hence predominantly White areas have the lowest referral rate; predominantly Coloured areas have the highest. Most referrals were made from the Mitchells Plain area which has the greatest number of children in the Cape Town area[26]. 17,89% of all referrals (21,31% of Cape Town referrals) were from Mitchells Plain and approximately 20% of all children under the age of 14 live in that area.

The other areas of high referral numbers in Cape Town were Athlone (7.70%). Hanover Park (7,32%), Retreat (7,32%) and

Elsies River (6,34%). Khayelitsha (4,30%) was not a high referral area though Guguletu/Crossroads (7,70%) was.

The referrals from outside Cape Town are considered in two groups emerge. The first group (10,49%) consists of the rest of the 01 region and Worcester, i.e. Worcester, Paarl, Atlantis and the Somerset West and Stellenbosch areas. Only Mitchells Plain provided more referrals than this area. The second group consists of all the other 'country cases', mostly in the Cape Province. Only 5,58% of referred patients were country cases out of the 01 region. Of these, half came from the East Coast (up to George) (2,80%) and almost the other half (2,26%) from the West Coast (up to Springbok) with a few from the Northern Cape (0,45%).

3. REFERRALS TO THE HOSPITAL

a) The Referral Agencies

Table 9 - Referral Agencies

	Number	%
General practitioners	2200	47,20
Day hospital	1143	24,50
Local authority	497	10,70
Provincial hospital	460	9,90
Midwife obstetric unit	76	1,60
Private specialists	65	1,40
Other	221	4,70
Total	4662	100,00

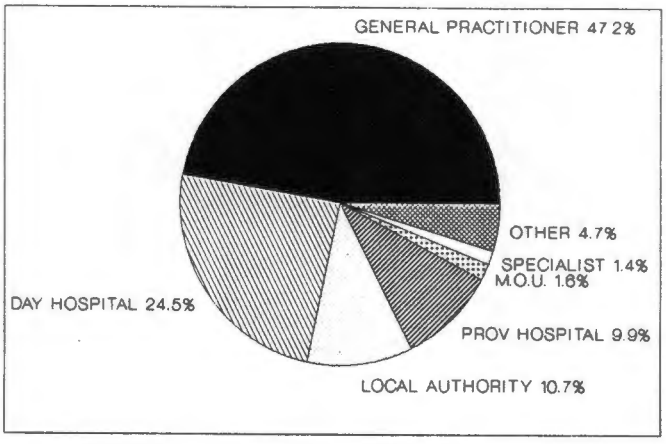


Figure 1
Referral Agencies

The majority of referrals (47,20%) were made by private general practitioners. Day hospitals provided the next largest group of referral (24,50%), followed by local authority clinics (10,70%) and provincial hospitals (9,90%). Referrals made by district surgeon were included in the general practitioner group.

b) Geographical area

Table 10 - Geographical Area of Referral Agencies

Area	Whole sample N = 4587 Number	%	Cape Town N = 4060 Number	%
A Bellville	264	5,76	264	6,50
B Elsies River	305	6,65	305	7,51
C Maitland	119	2,59	119	2,93
D Milnerton	28	0,61	28	0,69
E Atlantic Suburbs	99	2,16	99	2,44
F Cape Town	146	3,18	146	3,59
G Southern Suburbs	223	4,86	223	5,49
H Athlone	466	10,16	466	11,47
I Langa	53	1,16	53	1,30
J Heideveld	167	3,64	167	4,11
K Guguletu	263	5,73	263	6,47
L Hanover Park	357	7,78	357	8,79
M Lotus River	136	2,96	136	3,35
N False Bay	142	3,10	142	3,49
O Retreat	340	7,41	340	8,37
P Mitchells Plain	826	18,01	826	20,34
Q Khayelitsha	126	2,75	126	3,10
R Remainder 01 Region	383	8,35		
S Rest of Cape Prov	144	3,14		
Total	4587	100,00	4060	99,94

The referral agencies generally match the residential areas of the patients though certain areas have a lower concentration of referral agencies than referred patients (Cape Town only).

The overall picture is that the distribution of referral agencies reflects the distribution of patients referred to the hospital, both in Cape Town and from outside Cape Town.

The data on distribution of referral agencies within geographical areas (Tables 11 - 14; Figures 2 - 5) will aid

in any intervention programme that might be developed in the future.

Table 11 - Areas With High Day Hospital Referrals

	Number	% of Referrals	Total Number	Area
P	303	37,00	819	Mitchells Plain
L	159	45,04	353	Hanover Park
K	147	56,76	259	Guguletu and Crossroads
Q	79	64,75	122	Khayelitsha
B	72	24,91	173	Elsies River/Bishop Lavis
J	57	35,55	165	Heideveld
M	48	35,82	134	Lotus River
C	21	18,26	115	Kensington/Factreton
I	16	32,00	50	Langa

Number = Number of referrals from the Day Hospital in the area

Total Number = Number of referrals from all referral agents in the area

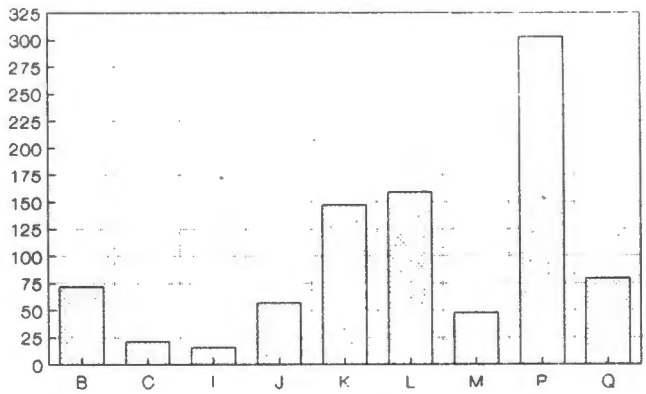


Figure 2
Areas With High Day Hospital Referrals

The day hospital referrals reflect the degree of overloading, lack of facilities to admit short term acutely ill children or deficiencies in the training of health personnel. Nine day hospitals have been identified.

Table 12 - Areas With High Provincial Hospital Referrals

	Number	% of Referrals	Total Number	Area*
G	105	47,30	222	Southern Suburbs
R	103	27,84	370	Rest of 01 Region
N	49	35,51	138	False Bay
E	61	61,62	99	Atlantic Suburbs

Number = Number of referrals from the Provincial Hospital in the area

Total Number = Number of referrals from all referral agents in the area

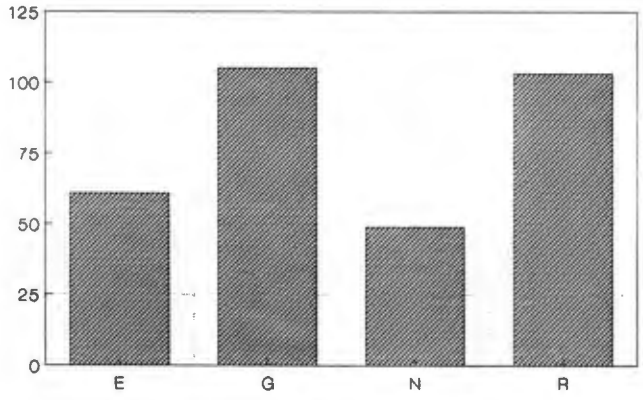


Figure 3
Areas With High Provincial Hospital Referrals

*	
False Bay	False Bay Hospital
Atlantic Suburbs	New Somerset Hospital
Southern Suburbs	Victoria Hospital
	Princess Alice Hospital
	Woodstock Hospital
	Mowbray Maternity Hospital
	Groote Schuur Hospital
01 Region	Eben Donges Hospital
(+ Worcester)	Hottentots Holland Hospital
	Paarl Hospital, Wesfleur Hospital

Provincial hospital referrals are mostly hospitals academically linked to the Children's Hospital, e.g. New Somerset Hospital and Victoria Hospital. The total number of referrals from provincial hospitals is only 9,90%.

Table 13 - Areas With High Local Authority Referrals

	Number	% of Referrals	Total Number	Area
L	67	18,98	353	Hanover Park
O	57	17,12	333	Retreat
J	48	29,09	165	Heideveld
K	39	15,06	259	Guguletu and Crossroads
F	23	16,31	141	Cape Town
M	20	14,93	134	Lotus River

Number = Number of referrals from the Local Authority Clinic in the area

Total Number = Number of referrals from all referral agents in the area

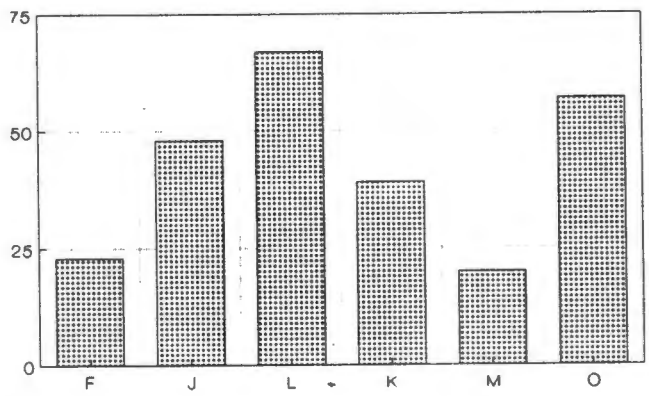


Figure 4
Areas With High Local Authority Referrals

All the local authority referral agencies fall within the Cape Town City Council or Regional Services Council of the Western Cape area of control.

Table 14 - Areas With Low GP Referrals (< 25%)

	Number	% of Referrals	Total Number	Area
J	36	21,82	165	Heideveld
E	15	15,15	99	Atlantic Suburbs
K	27	10,42	259	Guguletu and Crossroads
Q	9	7,38	122	Khayelitsha

Number = Number of referrals from the General Practitioners in the area

Total Number = Number of referrals from all referral agents in the area

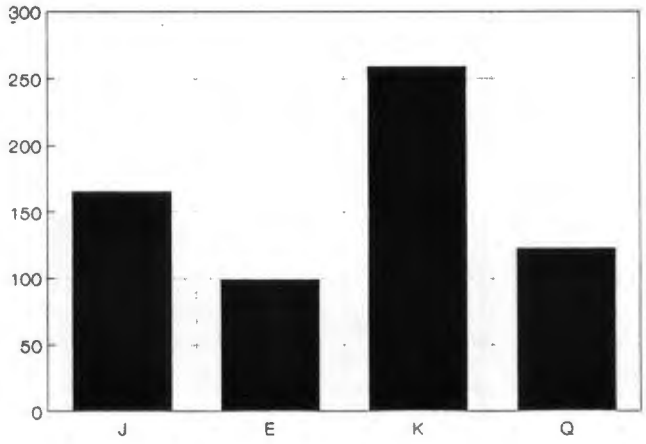


Figure 5
Areas With Low GP Referrals (< 25%)

General practitioners are evenly spread out in all areas.

c) Distribution of Referrals

Table 15 - To Whom Did the Referral Agencies Refer?*

	Number	%
MOPD	531	42,50
Registrar	22	1,80
NNJ	13	1,00
Specialist	290	23.20
SOPD	147	11,80
Trauma	45	3,60
Not specified	201	16,10
Total	1249	100,00

* As indicated in the letter

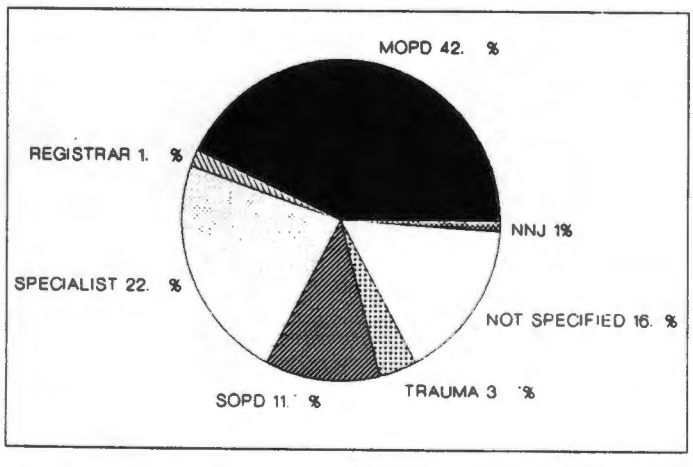


Figure 6
To Whom Did the Referral Agencies Refer?

Table 16 - Summary of Table 15
-To Whom did the Referral Agencies Refer?

	Number	%
MOPD	566	45,30
SOPD & Trauma	192	15,37
Specialist	290	23,20
Not specified	201	16,10
Total	1249	99,97

The referral agencies referred predominantly to non-specific clinics, i.e. medical outpatients (42,50%) and surgical outpatients (11,80%). There were 16,20% of referrals which were to 'the doctor on duty at the hospital' and were thus classified as non-specified referrals. Only 23.20% of all referrals were to the specialist clinics, i.e. the tertiary care clinics of the hospital.

Table 17 - Referral By Individual Agencies (%)

	GP (531) %	Day Hospital (263) %	Prov Hospital (90) %	Local Authority (127) %	Special-ist (21) %
MOPD	44,63	53,61	37,78	38,58	4,76
SOPD & Trauma	12,99	21,87	8,89	14,17	4,76
Special-ist	24,29	19,39	47,78	25,20	76,09
Other	18,08	5,32	5,56	22,05	14,29
Total	99,99	100,19	100,01	100,00	100,00

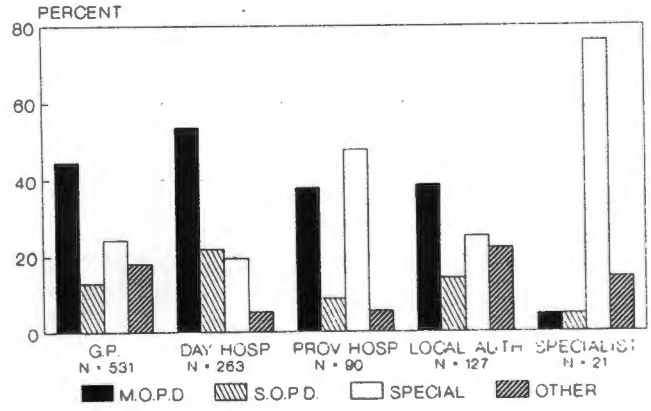


Figure 7
Referral By Individual Agencies (%)

If one considers the individual referrals of each agency the following emerges:

* Specialists refer predominantly to specialist clinics (76,09%), although there were only 23 referrals over the study period

* Provincial hospitals refer to specialist clinics in 47,78% of cases and most of the other referrals go to MOPD

* General practitioners send 24% of their referrals to specialist clinics, but most are referred to MOPD (44,63%)

* Day hospitals refer predominantly to MOPD and SOPD. These are patients who have acute illnesses and require more therapy than the day hospital can provide

* Local authority clinics refer to all clinics and a quarter of their referrals are to specialist clinics.

d) Referrals to Specialist clinics

Table 18 - Referral to Hospital Clinics

	Number	%
Specialist Clinics	266	23,52
Other OPD Clinics	865	76,48
Total	1131	100,00

Table 19 - Breakdown of Specialist Clinics

	Number	%
Ophthalmology	48	18,04
ENT	41	15,41
Dermatology	38	14,29
EEG	18	6,77
Orthopaedic	18	6,77
Neurology	17	6,39
Allergy	15	5,63
Other (all < 1%)	71	26,69
	266	99,99

Note: Developmental Clinic not included

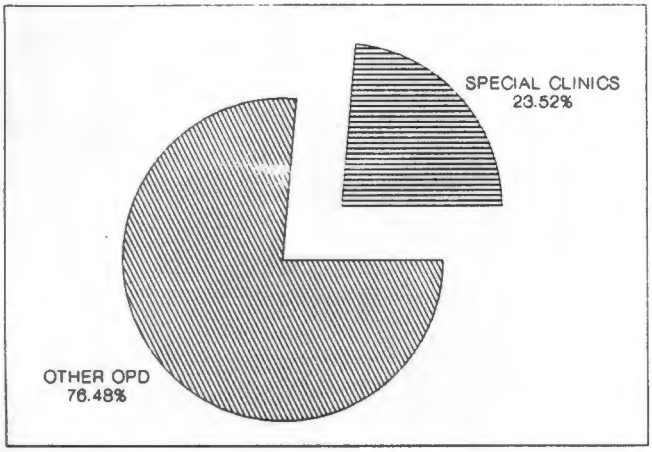


Figure 8
Referral to Hospital Clinics

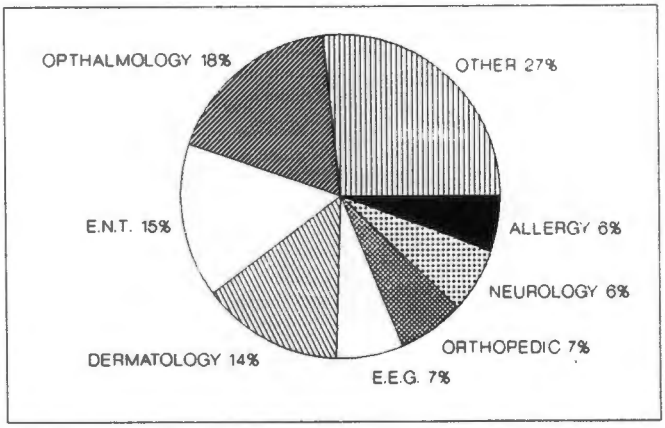


Figure 9
Breakdown of Specialist Clinics

The analysis of referrals to specialist clinics indicate that the surgical specialties received the most referrals, i.e. ophthalmology (18,04%) and ENT (15,41%). Of the medical clinics, dermatology received 14,29%, neurology 6,39% and allergy 5,03%. Of the specified technical services, EEG is the most utilised by outside agencies (6,76%).

Table 20 - Source of Selected Special Clinic Referrals

	GP (97) %	Day Hosp (53) %	Prov Hosp (47) %	Local Authority (31) %	Special -ist (16) %	Total (244) %
Eye	20,83	8,33	20,83	37,50	0,00	87,49
ENT	43,90	43,90	7,32	2,44	0,00	97,56
Dermatology	50,00	26,32	10,53	13,16	0,00	100,01
Neurology	35,29	17,65	17,65	5,88	17,65	94,12
Orthopaedic	38,89	22,22	27,78	0,00	0,00	88,89
Allergy	73,33	13,33	0,00	6,67	0,00	93,33
EEG	55,56	5,56	16,67	0,00	22,22	100,01

Referrals from other agencies are not included in this table.

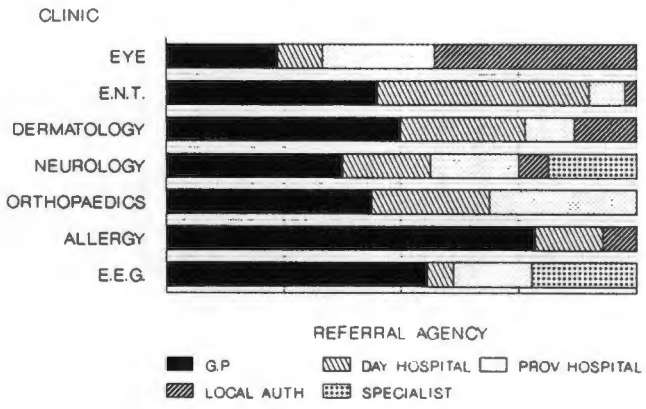


Figure 10
Source of Selected Special Clinic Referrals

From Table 20 (Figure 10) it is evident that:

* Local authorities utilise the Ophthalmology Clinic extensively (37,50% of their referrals to specialist clinics, usually for strabismus)

* Day hospitals utilise the ENT clinic (43,90% of their referrals, usually for chronic otitis media)

* General practitioners have an even spread, with the Dermatology, Ophthalmology, ENT and Allergy Clinics being well utilised.

* Private paediatricians refer mainly to the Neurology Clinic and the EEG service.

Table 21 - Relationship of Origin of Patient and Clinic to Which Referred

	Area	MOPD		SOPD/ Trauma		Not Specified		Specialist	
		N	%	N	%	N	%	N	%
B	Elsies River	32	44,44	10	13,89	17	23,61	13	18,06
K	Guguletu	44	50,00	13	14,77	11	12,50	20	22,73
O	Retreat	38	48,72	8	10,26	13	16,67	19	24,36
H	Athlone	41	46,59	21	23,86	14	15,91	12	13,64
L	Hanover Park	46	51,11	12	13,33	17	18,89	15	16,67
P	Mitchells Plain	105	51,22	34	16,59	25	12,20	41	20,00
R	Rest 01	48	41,74	14	12,17	23	20,00	30	26,09
S	Cape Prov	25	39,68	5	7,94	12	19,05	21	33,33
	All areas	493	44,69	163	14,71	192	17,33	192	23,47

Only those with more than 5% of patients are included.
N = Number

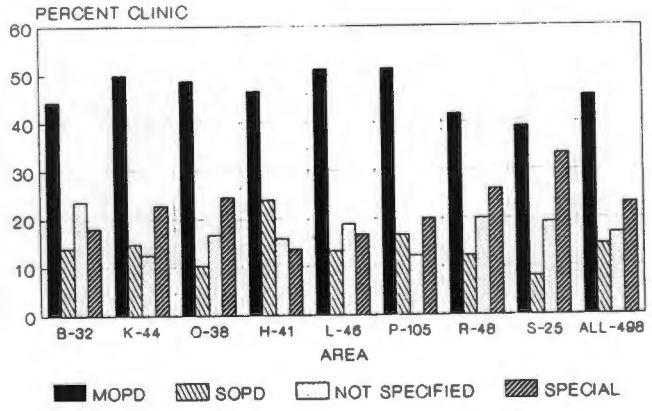


Figure 11
Relationship of Origin of Patient and Clinic to Which Referred

Table 21 (Figure 11) indicates that all areas were similar in referral patterns to different clinics. Each area appears to have followed the general trend of all referred

patients. Note that only those areas with over 5% of patients were analysed.

e) Time of presentation

Table 22- Time of Arrival of Patient

		Total		Sample	
		Number	%	Number	%
07H00 - 12H59	Morning	2952	55,00	674	58,71
13H00 - 16H59	Afternoon	991	18,50	212	18,47
17H00 - 22H59	Early after hrs	632	11,80	122	10,63
23H00 - 06H59	Late after hrs	795	14,80	140	12,20
	Total	5370	100,10	1148	100,01

Morning = 08h00-11h59
Afternoon = 12h00-16h59
Early after hours (A/H) = 17h00-22h59
Late after hours (A/H) = 23h00-07h59

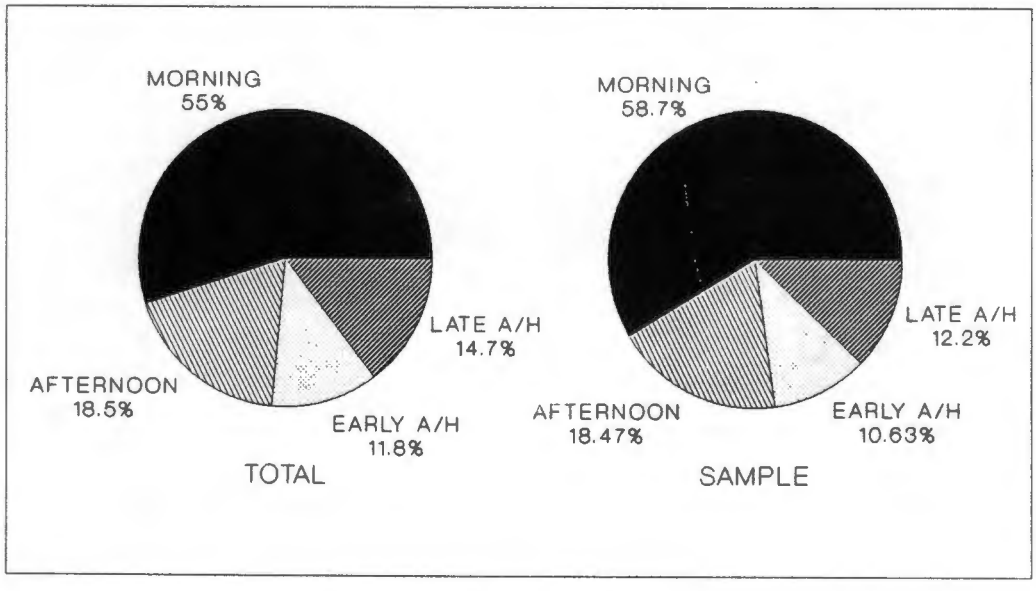


Figure 12
Time of Arrival of Patient

Table 22 (Figure 12) indicates that over half the referred patients (55,0%) arrived before 12.00 noon every day.

77,18% of the patients were seen during working hours. Of the patients seen after hours, two groups are identified. 10,63% were seen before 23H00, when the MOPD was still staffed by medical officers. However 12,20% were seen after 23H00, when the outpatients is staffed by a senior house officer.

Table 23 - Time of Presentation At Hospital Related to Referral Agency

	N	GP	Day Hosp	Prov Hosp	Local Authority	Special -ist	Total
		%	%	%	%	%	%
Morn	2553	46,96	20,64	10,18	13,63	1,61	93,02
After	858	40,33	38,23	8,04	6,41	1,40	93,01
Early A/H+	526	59,89	20,34	11,03	4,75	0,57	96,58
Late A/H+	724	46,96	24,86	10,02	9,53	1,24	91,37

+Definition is at Table 22

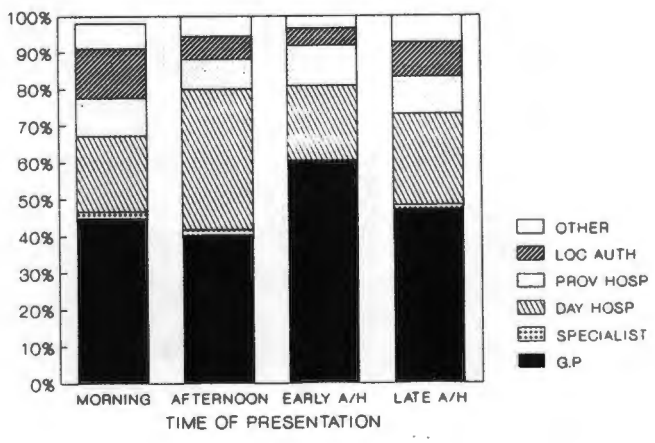


Figure 13
Referral Agency and Time of Presentation

Table 24 - Breakdown of Time At Which Referred Patients Presented

	Number	Morning	Afternoon	Early A/H+	Late A/H	Total
		%	%	%	%	%
GP	2200	54,50	15,73	17,32	15,45	100,00
Specialist	65	63,08	18,46	4,62	13,85	100,01
Day Hosp	1142	46,15	28,72	9,37	15,76	100,00
Prov Hosp	460	56,52	15,00	12,61	15,87	100,00
Local Auth	497	70,02	11,07	5,03	13,88	100,00
Other	297	59,93	16,16	6,06	17,85	100,00
Total	4661					

+Definition is at Table 22

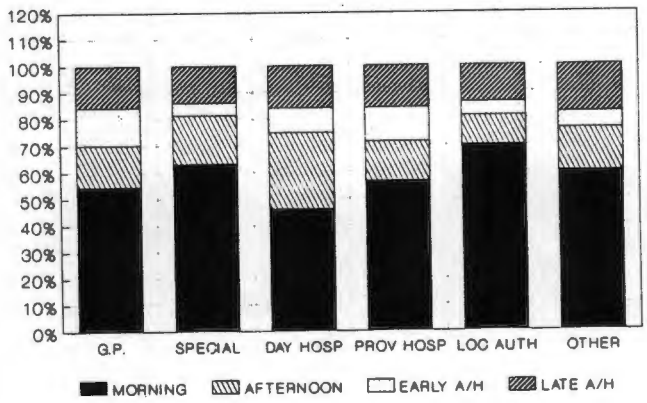


Figure 14
Breakdown of Time Referred Patients Presented

Tables 23 and 24 (Figures 13 and 14) indicate that:

* There is an increase in the number of patients referred by general practitioners in the early after hours period.

* There is an increase in the number of patients referred from day hospitals in the afternoon period.

* Patients referred by provincial hospitals and by private paediatricians do not vary in the time of presentation.

3. HOSPITAL DATA

a) Time of Presentation

Table 25 - Time of Presentation and Outcome of Consultation

	Number	Home	A8	A9	Adm	Total
		%	%	%	%	%
Morning	674	90,95	4,31	1,48	3,26	100,00
Afternoon	212	76,89	10,37	3,77	8,97	100,00
Early A/H+	122	72,95	13,94	4,92	8,20	100,01
Late A/H+	140	78,57	11,43	2,86	7,14	100,00
Total	1148					

+Definition is at Table 22

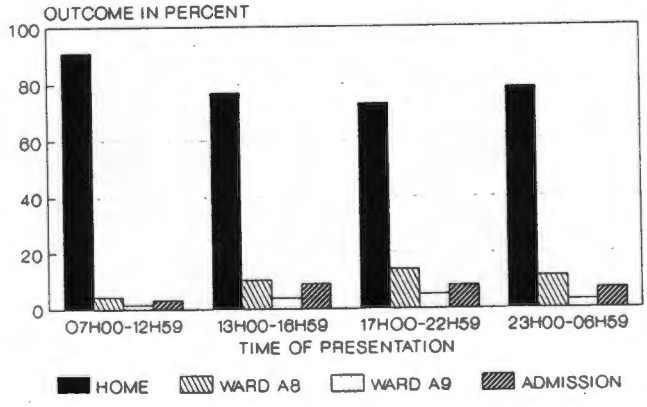


Figure 15
Time of Presentation and
Outcome of Consultation

Table 25 (Figure 15) indicates the relationship between the time of presentation and outcome of the consultation. The trend is that the patients seen in the morning were mostly sent home (90,95%) - reflecting attendance at non-acute clinics or resolution of acute symptoms. The number of patients sent home thereafter decreased to a low of 72,95% with an increase in hospital admissions from 3,26% to a maximum of 8,97%.

Table 26 - Outcome and Time of Presentation

	Number	Morning	Afternoon	Early A/H[+]	Late A/H	Total
		%	%	%	%	%
Home	975	62,87	16,72	9,13	11,28	100,00
A8	84	34,52	26,19	20,24	19,05	100,00
A9	28	35,71	28,57	21,43	14,29	100,00
Hosp adm medical[a]	18	27,78	22,22	22,22	27,78	100,00
Hosp adm surgical[b]	43	39,53	34,88	13,95	11,63	99,99
Total	1148					

[+]Definition is at Table 22
[a] Hospital admission - medical ward
[b] Hospital admission - surgical ward

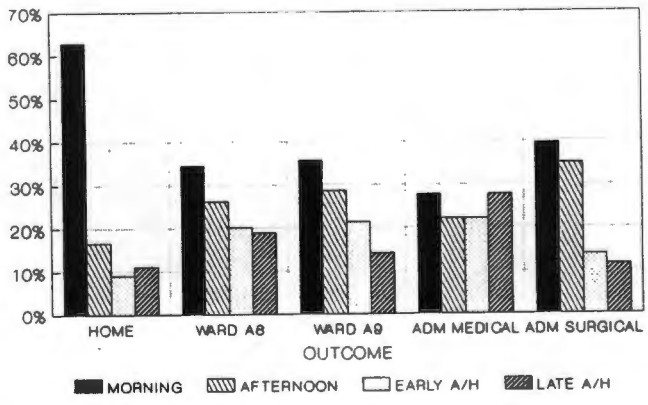


Figure 16
Outcome and Time of Presentation

If the table is turned around as in Table 26 (Figure 16), then it is evident that the figures give another view.

* The late after hours group (23H00 - 07H59): (12,20% of the total) have a high admission rate - 19,05% to A8 and 27,78% to medical wards.

* This applies also for the early after hours group (17H00 - 22H59): 10,63% of the total, but they provide 20,24% of A8 admissions and 22,22% of medical ward admissions.

* The morning group (08H00 - 11H59): 58,71% of the total had lower numbers of admissions as expected as shown earlier.

b) Consultation

Table 27 - Person Consulted at the Hospital

	Number	%
Medical Officer	545	47.90
Registrar	287	25,20
Consultant	222	19.50
Technician	55	4,80
Unknown	29	2.50
Total	1138	100,00

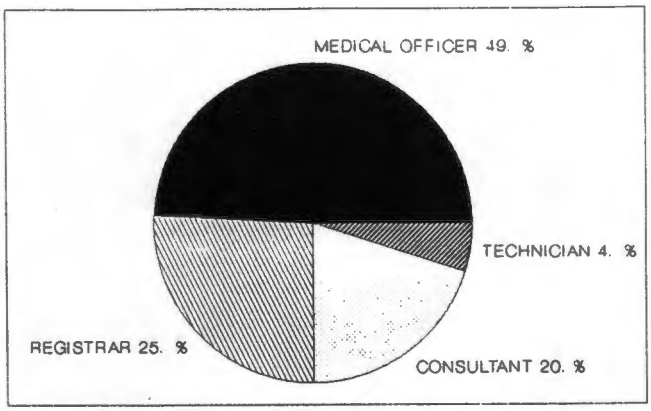


Figure 17
Person Consulted

The policy of the 'letter case' clinics is that all patients referred to the hospital during office hours (i.e. Monday to Friday 08H00 to 15H00) are seen by one of the consultants on duty in OPD. Table 27 (Figure 17) indicates that consultants only saw 19,50% of all referred patients. 22,83% of patients were seen after hours, so the consultants actually saw 25,05% of the patients available for them to see (886 patients). The registrars saw 25,20% of the patients - mostly at specialist clinics, as the medical outpatients registrar only sees those patients admitted to A8.

Table 28 - Outcome of Consultation

	Number	%
Home	975	84,90
A8 (overnight acute adm)	34	3,00
A8 (then hospital adm)	50	4,40
Surgical ward direct	43	3,70
A9 (diarrhoeal ward)	28	2,50
Medical ward direct	14	1,20
ICU	4	0,30
Total	1148	100,00

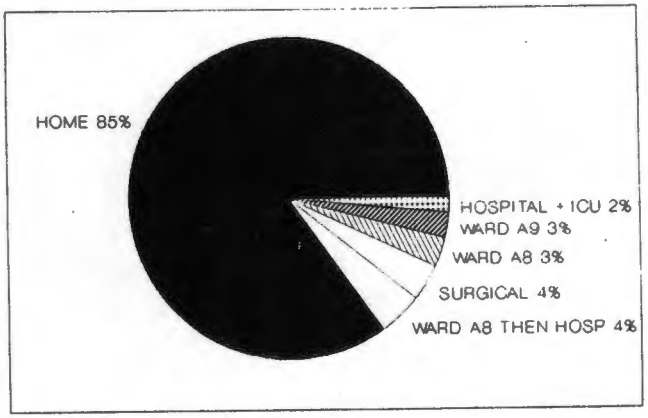


Figure 18
Outcome of the consultation

Table 28 (Figure 18)indicates the outcome of the consultation, showing that 84,90% of all patients referred are sent home. Only 5,20% of the referred patients were so acutely ill that direct ward admission was necessary and only 0,30% required ICU admission (though some may have bypassed the letter collecting point). The overnight wards admitted 9,90% of the referred patients, of whom half were subsequently admitted to the hospital. Thus a total of 9,60% of the referred patients were admitted to the 'tertiary' hospital. Included in the 975 patients sent home were those that attended specialist clinics, i.e. tertiary clinics.

Table 29 - Follow Up of Patient

	Number	%
Red Cross Hospital	410	35,80
Referral agency	252	22,00
Not required and indicated as such	240	21,00
Admitted	173	15,12
No evidence of follow up	69	6,03
Total	1144	99,95

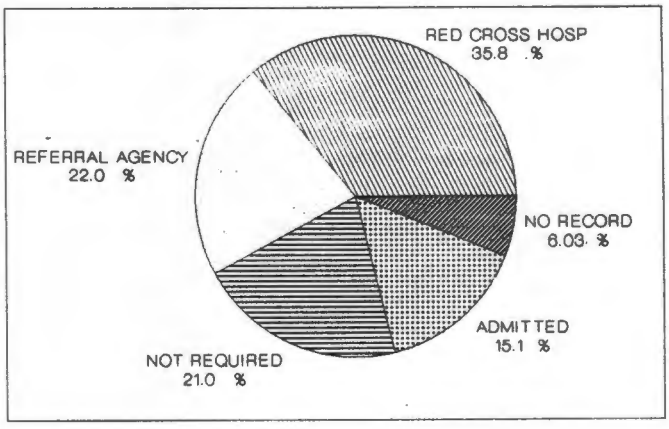


Figure 19
Follow up of patients

Table 29 (Figure 19) indicates the follow up of patients referred to the hospital. Only 22% were referred back to the referring agency for follow up. The Children's Hospital undertook follow up of 35,80% of the patients while 21% did not require any follow up. The 6,03% who did not have any record of follow up could be added to this group.

Table 30 - Contact with Referral Agency

	Number	%
Contact made (noted in notes or copy of letter)	346	30,30
No record of contact made in folder	797	69,70
Total	1143	100,00

However Table 30 clearly indicates that Red Cross Hospital staff do not make contact with the referring agencies, or if they do so they do not make any record of it in the hospital folder. Only 30,30% of all staff replied to the referral agency or made a record of their reply.

Table 31 - Differentiation of Contact With Referral Agencies

Number = 1138

	Contact Made		No Record of Contact Made	
	Number	%	Number	%
Technician	40	72,73	15	27,27
Consultant	148	66,67	74	33,33
Registrar	88	30,66	199	69,34
Medical Officer	61	11,19	484	88,81
Other	6	20,69	23	79,31
Total	343	30,14	795	69,86

Missing = 5

Chi square $p < 0,0001$

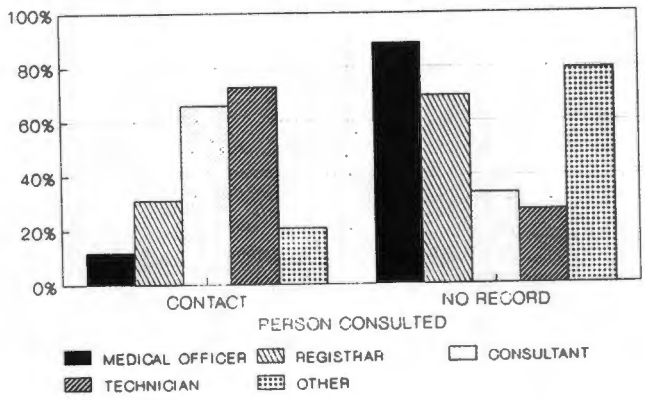


Figure 20
Differentiation of Contact
With Referral Agencies

If the person consulted is considered as in Table 31 (Figure 20), it is evident that consultants and technicians fare the best - technicians because they have to send reports and consultants possibly because they have more time to reply. The record for medical officers' replies - 11,19% - to letters is low.

If the referring agency is considered then the contact was as follows:

Table 32 - Influence of Referral Agencies on Contact Made

	Contact Made		No Record of Contact	
	Number	%	Number	%
Specialist	17	80,95	4	19,05
Local authority	44	34,65	83	65,35
Provincial hospital	28	31,11	62	68,89
GP	163	30,64	369	69,36
Day hospital	64	24,33	199	75,67
Other	14	22,95	47	77,05

Missing = 49

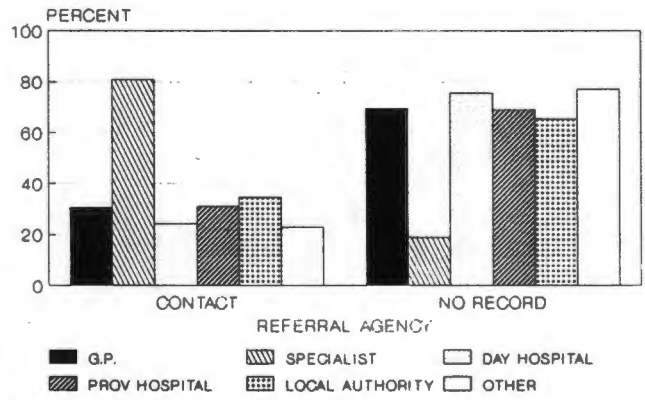


Figure 21
Influence of Referral Agencies on Contact Made

Table 32 (Figure 21) indicates that referral letters from private specialists provoked a reply in 80,95% of cases, but unfortunately the significance cannot be assessed as the numbers are too low. It otherwise made no difference who referred the patient as to whether a reply was written.

Table 33 - Contact Made With Referral Agencies By Selected Special Clinics:

	Contact Made		No Contact Made	
	Number	%	Number	%
EEG	18	100,00	0	0,00
Neurology	8	44,44	10	55,56
Dermatology	14	40,00	21	60,00
Ophthalmology	18	35,29	33	64,71
ENT	13	32,50	27	67,50
Orthopaedics	1	6,60	15	93,40
Allergy	1	5,26	18	94,74

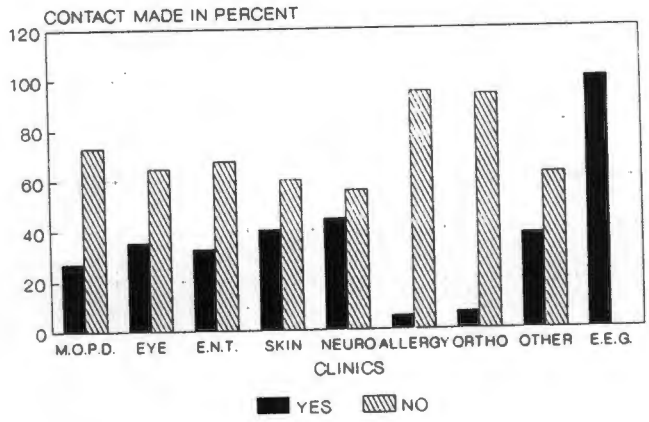


Figure 22
Contact Made With Referral Agencies by Selected Special Clinics

Table 33 (Figure 22) considers the most utilised specialist clinics and the replies made by the clinics. With the exception of the EEG service, the specialist clinics fared only slightly better than the general trend.

c) Diagnoses

Table 34-Comparison of Diagnoses Made

	Referral Diagnoses		Hospital Diagnoses	
	Number	%	Number	%
Respiratory	149	17,57	172	20,28
Neurology	147	17,33	107	12,62
Alimentary	132	15,57	118	13,92
Genito urinary	35	4,13	31	3,66
Cardiovascular	14	1,65	13	1,53
Haematology	3	0,35	2	0,24
Nutrition	12	1,42	10	1,18
Infection	62	7,31	59	6,96
Trauma	67	7,90	55	6,49
Ophthalmology	60	7,08	52	6,13
Dermatology	61	7,19	64	7,55
Metabolic	12	1,42	10	1,18
ENT	60	7,08	48	5,66
Orthopaedic	16	1,89	14	1,65
Genetic	13	1,53	10	1,18
Other	5	0,59	83	9,79
	---	------	---	----
Total	848	100,00	Total 848	100,00

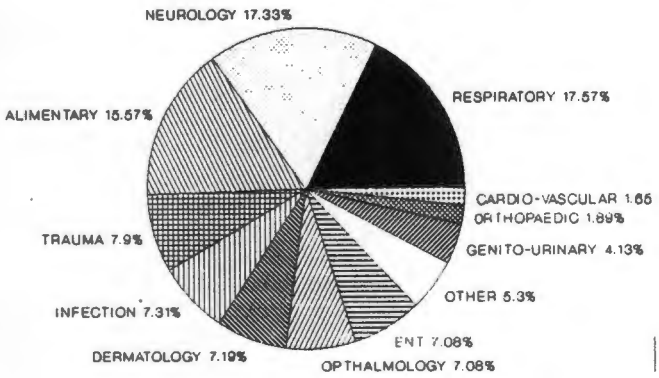


Figure 23
Referral Diagnoses

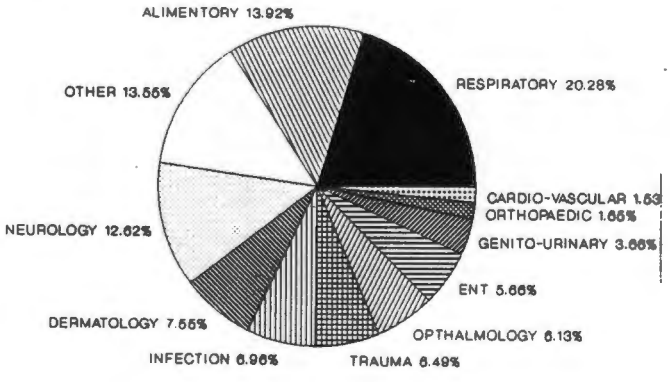


Figure 24
Hospital Diagnoses

A total of 400 different diagnoses were coded for the patients (see Appendix 9). However the majority were codes only entered once and there was a large scatter of diagnoses.

Table 34 (Figures 23 and 24) indicates the broad categories of diagnoses, grouped by system, for referral agency and hospital doctor. The comparison between the two groups indicates that there is no significant difference in the broad diagnoses, i.e. the referral agency diagnoses were in the same broad categories as those of the 'gold standard'. The major difference was in the neurology group (17,33% of referral diagnoses vs 12,62% of hospital diagnoses).

Table 35 - Ten Most Common Diagnoses Made By Referral Agencies

		Number	%
1	Convulsions/epilepsy	52	4,51
2	Diarrhoeal disease	39	3,38
3	Eczema	37	3,21
4	Bronchopneumonia	35	3,04
5	Asthma	30	2,60
6	Abscess/cellulitis	25	2,43
7	Strabismus	23	1,99
8	Bronchitis	23	1,99
9	Febrile convulsions	21	1,82
10	Bronchiolitis	20	1,73
10	Meningitis	20	1,73
Note:	No diagnosis given	62	5.38

Table 36 - Ten Most Common Hospital Diagnoses

		Number	%
1	Normal examination	97	8,41
2	Diarrhoeal disease	46	3,99
3	Grand mal epilepsy/convulsions	37	3,21
4	Eczema	37	3,21
5	Asthma	31	2,69
6	Cellulitis/abscess	30	2,60
7	Bronchopneumonia	27	2,34
8	Bronchitis	24	2,08
9	Bronchiolitis	23	1,99
10	Lobar pneumonia	23	1,99

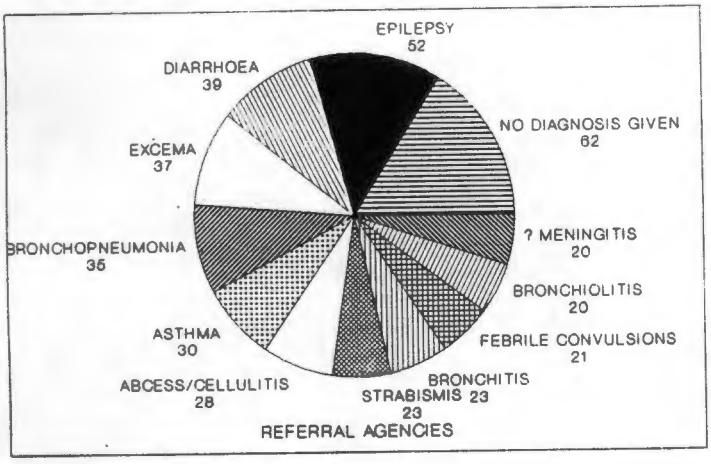


Figure 25
Common Referral Agencies' Diagnoses

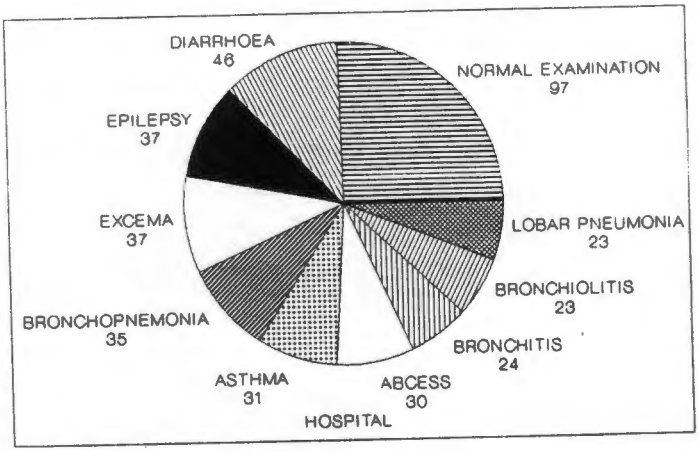


Figure 26
Common Hospital Diagnoses

Tables 35 and 36 (Figures 25 and 26) indicate the 10 most common diagnoses made by the referral agencies and by the hospital doctors. The most common hospital 'diagnosis' was that of normal examination - 8,41%. The rest of the diagnoses are similar, with respiratory diagnoses being the most common - 9,36% in referral diagnoses and 11,09% in hospital diagnoses.

The diagnosis made by the referral agency was compared to that made by the hospital doctor consulted. The Red Cross Hospital doctor diagnosis is taken to be the gold standard. The positive predictive value for broad grouping of diagnoses was calculated for selected diagnoses.

Table 37 - Positive Predictive Value of Referral Diagnosis

	Diagnoses Group	Positive Predictive Value
1.	Respiratory system	79,65
2.	Alimentary	92,37
3.	Neurology	92,52
4.	Trauma	96,36
5.	ENT	93,75
6.	Eye	100,00
7.	Skin/Dermatology	92,19
8.	Infection	69,49

The referral diagnoses were correlated with hospital diagnoses in Table 37. A positive predictive value (see Appendix 1 for the definition) was calculated from the percent agreement between the two agencies, with the Red Cross Hospital diagnoses taken to be the 'gold standard'. The value should not be taken to indicate that there is concurrence on specific diagnoses, but rather a concurrence of broad system diagnoses.

For example:

* Highest positive predictive value was for eye conditions - 100,00%.

* The low predictive value of diagnosis of infections of 69,49%.

It is difficult to correlate closely the referral diagnoses with the hospital diagnoses except in broad terms due to the vast numbers of actual diagnoses.

4. LETTER ANALYSIS

1143 letters were analysed as follows:

Table 38 - Overall Letter Analysis

Number = 1143

	History		Examination		Diagnosis	
	Number	%	Number	%	Number	%
Present	596	52,10	515	45,10	879	76,90
Absent	100	8,70	182	15,90	64	5,60
Incomplete	447	39,10	446	39,00	200	17,50
Total	1143	99,90	1143	100,00	1143	100,00

	Investigation		Treatment	
	Number	%	Number	%
Present	135	11,80	320	28,00
Absent	997	87,20	788	68,90
Incomplete	11	1,00	35	3,09
	1143	100,00	1143	99,99

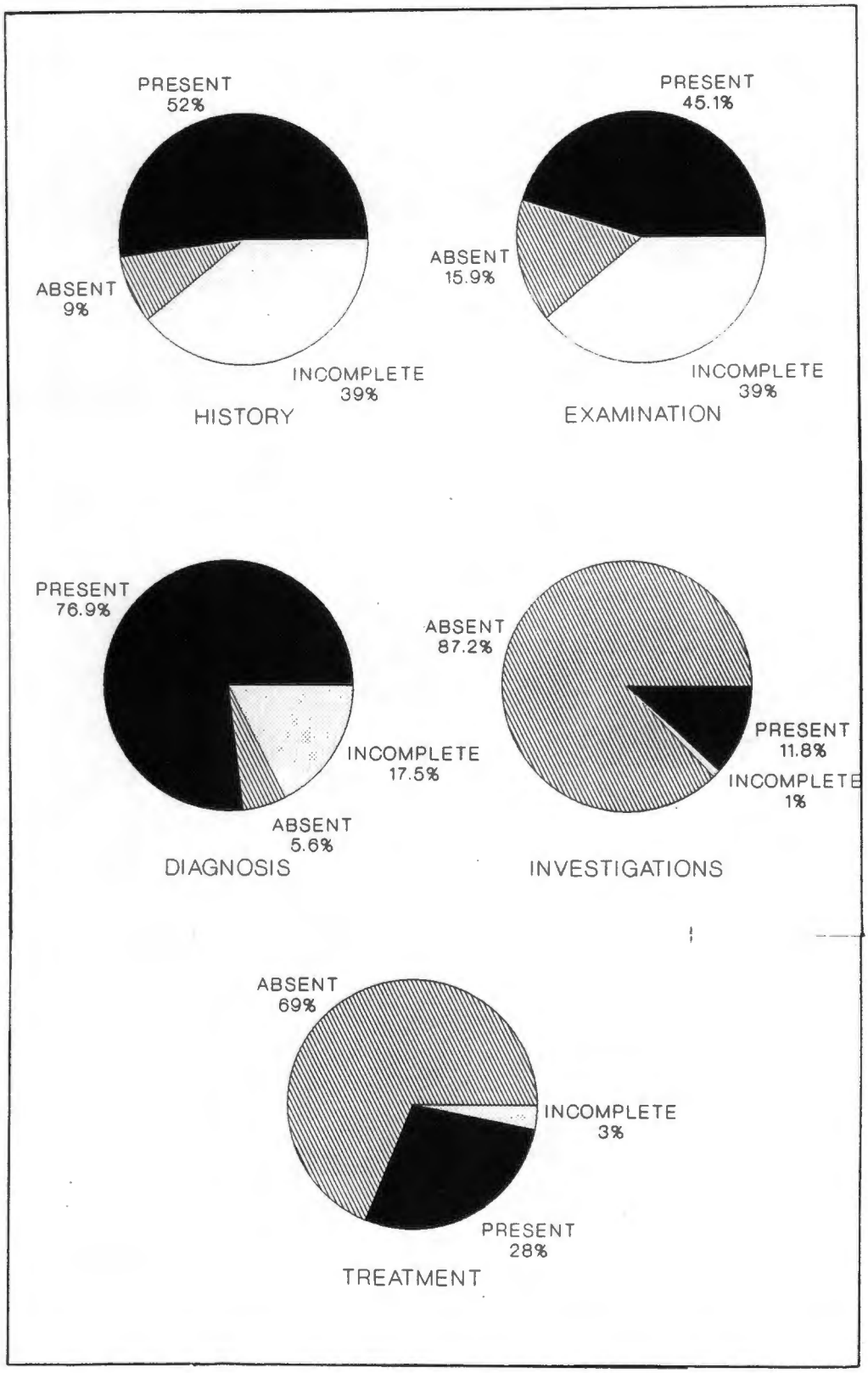


Figure 27
Overall Letter Analysis

Table 39 - Comparison of Agencies

Details of history of patient

	G.P.		Day Hospital		Prov Hospital		Local Authority		Specialist	
	Number	%	Number	%	Number	%	Number	%	Number	%
Present	277	52,26	155	57,84	55	60,00	47	36,72	12	52,17
Absent	45	8,49	9	3,36	7	7,37	25	19,53	1	4,35
Incomplete	208	39,25	104	38,81	31	32,63	56	43,75	10	43,48
Total	530	100,00	268	100,01	95	100,00	128	100,00	23	100,00

Details of examination of patient

	G.P.		Day Hospital		Prov Hospital		Local Authority		Specialist	
	Number	%	Number	%	Number	%	Number	%	Number	%
Present	242	45,66	141	52,81	45	47,37	33	25,78	9	39,13
Absent	92	17,36	24	8,99	17	17,89	27	21,09	2	8,70
Incomplete	196	36,98	103	38,20	33	34,74	68	53,13	12	52,17
Total	530	100,00	208	100,00	95	100,00	128	100,00	23	100,00

Diagnosis made by referring agent

	G.P.		Day Hospital		Prov Hospital		Local Authority		Specialist	
	Number	%	Number	%	Number	%	Number	%	Number	%
Present	406	76,60	216	80,60	82	86,32	91	71,09	18	78,26
Absent	23	4,34	9	3,36	6	6,32	12	9,38	0	0,00
Incomplete	101	19,06	43	16,04	7	7,37	25	19,53	5	21,74
Total	530	100,00	268	100,00	95	100,01	128	100,00	23	100,00

The analysis of the letters indicated that:

* 52,10% had an adequate history
* 45,10% had an adequate report on the examination
* 76,90% of referral letters gave a diagnosis
* 11,80% reported on investigations undertaken
* 28,00% of referral agencies indicated that treatment had been given

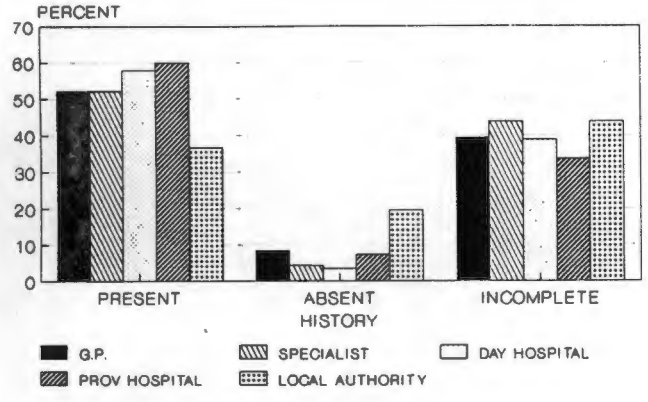
'Adequate' implies details were given about that particular aspect of the letter.

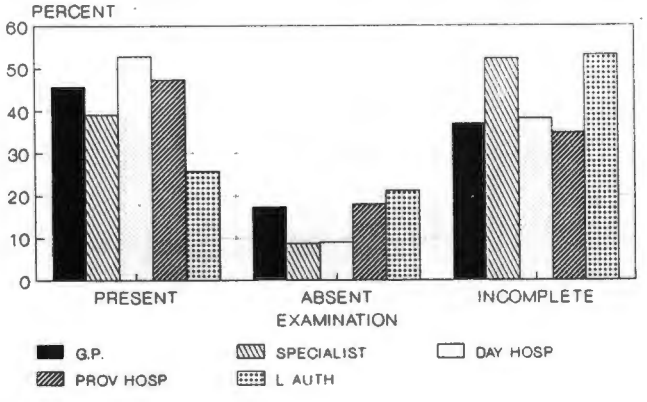
Details of investigations performed on the patient

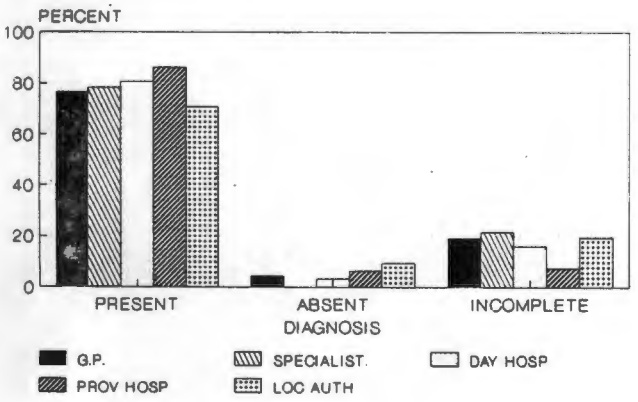
	G.P.		Day Hospital		Prov Hospital		Local Authority		Specialist	
	Number	%	Number	%	Number	%	Number	%	Number	%
Present	35	6,60	35	13,06	27	28,42	8	6,3	6	26,09
Absent	490	92,45	230	85,82	68	71,58	120	93,70	16	69,57
Incomplete	5	0,94	3	1,12	0	0,00	0	0,00	1	4,35
Total	530	99,99	268	100,00	95	100,00	128	100,00	23	100,00

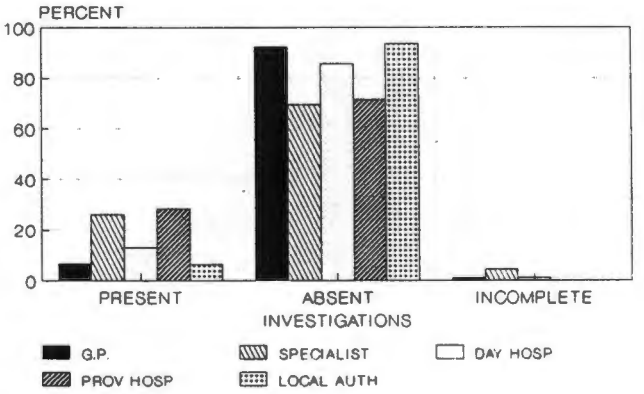
Details of treatment administered to the patient

	G.P.		Day Hospital		Prov Hospital		Local Authority		Specialist	
	Number	%	Number	%	Number	%	Number	%	Number	%
Present	153	28,92	65	24,25	46	48,42	16	12,60	16	69,57
Absent	360	68,05	195	76,76	47	49,47	106	83,46	6	26,09
Incomplete	17	3,02	8	2,99	2	2,11	5	3,94	1	4,35
Total	530	99,99	268	100,00	95	100,00	128	100,00	23	100,01









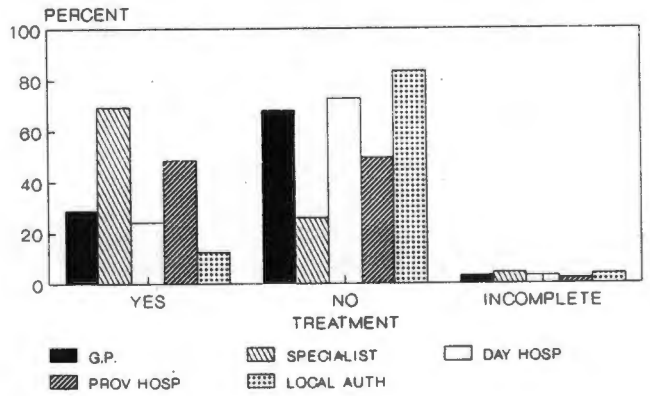


Figure 28
Comparison of the Writing of Letters by Referral Agents

Tables 39 (Figure 28)indicates the differences between the agencies as far as the letter analysis is concerned.

* History - the local authority letters were the worst (36,72% gave a history as opposed to the mean of 52,10%)

* Examination - the local authority (25,78%) and specialist letters (39,13%) were the worst in this respect.

* Diagnoses - all agencies were similar.

* Investigations - generally not undertaken by any of the agencies.

* Treatment - only the specialists (69,57%) gave an acceptable treatment report.

Table 40 - Number of Attributes in Referral Letters

	Number	%
All attributes present	55	4,96
< 5 attributes present	1052	95,04
Total	1107	100,00
4 or more attributes present	226	20,42
< 4 attributes present	881	79,58
Total	1107	100,00
3 or more attributes present	452	41,90
< 3 attributes present	655	58,10
Total	1107	100,00

Table 40 indicates that:

* Very few letters were totally comprehensive (4,80%), i.e. had all attributes present

* Only 20,42% had four attributes or more

* Only 41,90% had three attributes or more

Table 41 - Influence of Letter Quality On the Writing of Replies to Referral Agencies By the RCWMCH Staff

Samples = 1107 Missing = 29

	4 attributes (226)		< 4 attributes (881)	
	Number	%	Number	%
Reply written	96	42,48	235	26,67
No record of reply	130	57,52	646	73,33
Total	226	100,00	881	100,00

Chi square p < 0,0001

	3 attributes (452)		< 3 attributes (655)	
	Number	%	Number	%
Reply written	158	34,96	173	26,41
No record of reply	294	65,04	482	73,59
Total	452	100,00	645	100,00

Chi square p < 0,0002

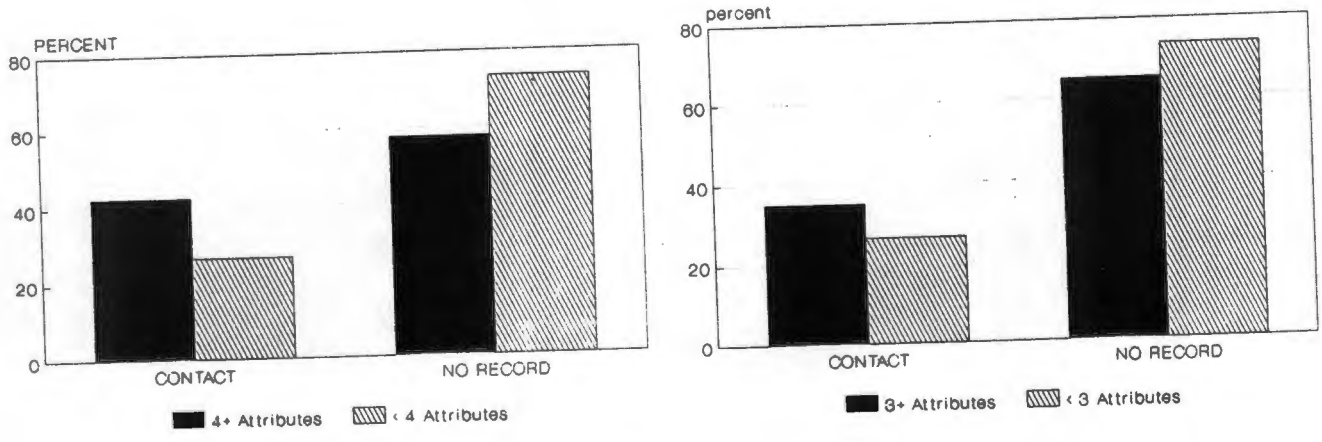


Figure 29
Influence of Letter Quality on Writing of Replies
By RCWMCH Staff

The number of attributes present, i.e. good quality letters, did influence the writing of replies, as shown in Table 41 (Figure 29). If a letter had more than four attributes then 42,48% of these were replied to as opposed to 26,67% of those with less than four attributes. This is statistically significant, as was the analysis for three or more attributes.

CHAPTER 4 - DISCUSSION

The study provided information on the patients referred to the hospital, the referral agencies who refer to the hospital, the hospital response and outcome of consultation and the types of letters that are written. In this chapter the questions posed below will be answered as they emerged from the study.

1 Whom does Red Cross War Memorial Children's Hospital serve as a referral centre in terms of the patients and the referral agents?

2 How does the hospital deal with and respond to the referred patients?

3 What is the quality of referral letters?

4 Does the Red Cross War Memorial Children's Hospital have the problems as defined in Chapter 1 ?

Recommendations to health authorities and the hospital administration will be made in the final chapter.

1. WHOM DOES THE HOSPITAL SERVE?

a) Referred Patient Profile

In the six month period 1st July to 31st December 1987, 6,90% of the patients seen at the hospital were referred by outside agencies. During the study period 136,412 patients were seen in Outpatients. Thus it is clear that the hospital does not function primarily as a referral centre.

The patients were not entirely representative of the general profile of patients seen at outpatients in terms of sex and race.

Table 42 - Comparison of study data with hospital data

	Hospital[6]	Study
Number =	136412	5327
	%	%
White male	4,12	5,20
White female	2,62	2,60
Coloured male	35,25	43,70
Coloured female	28,44	33,40
Black male	15,63	7,70
Black female	13,93	7,40
	-----	------
Total	99,99	100,00
White	6,74	7,80
Coloured	63,69	77,10
Black	29,56	15,10
	-----	------
Total	99,99	100,00

Thus fewer Black patients are referred than those that present directly to the hospital without referral. A possible cause is that health facilities are not as well developed in Black areas and that Black patients do not seek primary health care prior to coming to the

hospital, i.e. the hospital is utilised by Black patients as a primary health care centre. Black patients may not be able to afford care in the private sector or there may be an overload on limited facilities. Furthermore the rapid urbanisation that has occurred over the past 10 years has not been accompanied by an adequate growth in the provision of health services.

Sex distribution is similar except that more Coloured males are referred, though the overall male to female ratios are similar. The age distribution is also similar as shown in the table below with the majority of patients being under 5 years of age.

Table 43 - Comparison of age distribution

	Hospital	Study
	%	%
Under 1 yr	25,73	29,50
>1 - 5 yrs	37,12	39,90
> 5 yrs	35,88	30,60
Total	98,73	100,00

The new patients, i.e. patients who had never been to the hospital previously, were about half of the study population. This is possibly to be expected as about one third of the study population was under 1 year of age and thus are not likely to have been hospital patients as they had probably been healthy until this time. 15% of the sample were from outside Cape Town.

The accuracy of the above distribution depends on the assumption that admitting departments classified patients correctly.

17,89% of all referrals (21,31% of Cape Town referrals) were from Mitchells Plain. Approximately 20% of all children under the age of 14 live in Mitchells Plain.[26] Mitchells Plain is served by over 50 general practitioners, 1 day hospital and 6 local authority clinics. A private hospital was opened in 1987. Based on the referral figures for Mitchells Plain, one can extrapolate that approximately 4,000 patients are referred from that area to the Children's Hospital annually. There has been considerable demand at the community level for additional health services for that area. The findings of the study suggest that the local health structure needs support. An outreach programme aimed at supporting the primary health care providers, primarily consisting of ongoing educational

programmes and community visits by paediatricians may help in decreasing referrals. A 24 hour health facility capable of serving the needs of the acutely ill child who requires short term secondary tier care would aid in decreasing referrals.

The Athlone area provided 7,70% of patients (9,17% of Cape Town referrals) though only 3% of the childhood population of greater Cape Town live in this area[26]. This is probably the result of the close proximity of the area to the hospital. This does not apply to the White southern suburbs that surround the hospital as White patients are served by a well developed private sector.

Thus the typical referred patient is a child under the age of five, usually Coloured and from an area with underdeveloped health care facilities.

b) Referral Agencies

The majority of referrals (47,20%) were made by private general practitioners. This reflects the number of patients seen by the general practitioners. Day hospitals were the next largest source of referrals. In the Mitchells Plain community survey[27] over 50% of patients were taken to general

practitioners as the first health contact. It is clear that any possible intervention by health authorities must include the general practitioners and day hospitals. It should be noted that referrals from the midwife obstetric units, usually for neonatal jaundice, were low - 1,60%, probably reflecting the effective intervention of the community neonatology service.

The geographical location of the referral agents is similar to the residential areas of the patients though certain areas differ. Only the Southern Suburbs and Atlantic Suburbs showed an increase.

Table 44 - Comparison of Selected Geographical Areas

(as percentage of Cape Town areas)

	Referred Patients %	Referral Agency %
Guguletu/Crossroads	9,17	6,47
Hanover Park	8,72	8,79
Mitchells Plain	21,31	20,34
Khayelitsha	5,12	3,10
Heideveld	5,39	4,11
Southern Suburbs	1,36	5,49
Atlantic Suburbs	1,06	2,44

From the above it is clear that the hospital serves virtually the entire metropolitan Cape Town. The 'division' of metropolitan Cape Town into two regions by the Cape Provincial health authorities , one to refer to Red Cross War Memorial Children's Hospital and the other to refer to Tygerberg Hospital is based on geographical considerations. This division does not take into account factors such as patient preference, referring agent preference, and where the referring agent received training. Thus an area such as Elsies River which should refer to Tygerberg Hospital features high up on referrals to Red Cross

War Memorial Children's Hospital. It is therefore clear that the simple division of an area cannot be successful unless the health authorities advertise this to all possible referral agents, and enforce it by means of refusing to admit a referred patient to the 'incorrect' hospital.

The removal of choice of referral hospital from the patient and from the referring agent is controversial and is difficult to apply in a mixed health system. However the rule can apply to referring agents that fall under the control of the health authorities. In order to provide an adequate health service the geographical boundaries of the region to be served must be defined.

The referral agencies referred predominantly to non-specific clinics, i.e. medical outpatients (42,50%) and surgical outpatients (11,80%). This reflects the fact that the majority of referrals to the hospital possibly did not warrant referral to a tertiary care hospital, and that the hospital functions as a referral centre on the first, second and third level of referral as defined by the World Health Organisation.[28] It may be possible that the referral agency did not book an appointment for the specialist clinic and sent the patient to the hospital on the

off-chance that the patient would be seen by a specialist. An example would be a generally well patient with a cardiac murmur who would be referred to "The doctor, OPD, Red Cross Hospital" and not, more appropriately, to the Cardiac Clinic. This was coded as a referral to MOPD, though ultimately the patient may or may not have been seen by the cardiologist.

The analysis of referrals to specialist clinics indicate that the surgical specialties received the most referrals, i.e. ophthalmology (18,04%) and ENT (15,41%), and the most common medical referrals were to dermatology (14,29%) and neurology (6,39%) clinics. This is of importance in the future planning of ongoing intervention at the community level by means of educational and outreach programmes.

2. HOW DOES THE HOSPITAL RESPOND TO REFERRALS?

a) Response and Time of arrival of patients

The referred patient should ideally be referred for a higher level of care than available in the community. The time of arrival at the hospital influences who assessed the patient though the level of care provided may be of a higher level than provided in the community. Of the patients seen after hours, two

groups are identified. 10,63% were seen before 23H00, when the MOPD is still staffed by medical officers. 12,20% were seen after 23H00, when the outpatients is staffed by a senior house officer. Thus these patients, referred to the Children's Hospital for a 'more expert' opinion, were seen by the most junior of the hospital staff, though a registrar was available for consultation if required.

The time of presentation does influence the outcome of the consultation. This is related to the type of clinic attended, the presenting problem and the experience of the attending doctor. It is possible that sicker patients are referred to hospital later in the day and that the morning referrals reflect the more chronically ill patients who do not require admission. It is interesting to note that the late after hours patients are similar to those in the early evening and afternoon and in fact have a lower direct hospital admission rate.

b) <u>The Consultation</u>

If the Children's Hospital is to function as a tertiary or even secondary centre or as an 'academic' centre, then the patients referred to the hospital should be seen by a consultant paediatrician,

specialist or by a registrar. Consultants only saw 19,50% of all referred patients (25% of the patients available for them to see) and the registrars saw 25,20% of the patients - mostly at specialist clinics. This is far less than that reported by Forsyth and Logan[29], who found that 80% of the patients referred were seen by a consultant. This refers to the United Kingdom and covers all age groups.

Thus the majority of patients are seen by a medical officer in outpatients. As is noted in the analysis of diagnoses this is not necessarily inappropriate. All patients referred to the Children's Hospital are not referred for specialist opinion. The patients who require specialist opinion should ideally be screened by the medical officers in outpatients and then proceed to the specialist clinics if required.

A total of 9,60% of the referred patients were admitted to the 'tertiary' hospital. Some of these admissions could possibly have been handled at the regional level had facilities been available. Those who were sent home included patients who attended the specialist clinics for more chronic conditions requiring tertiary care.

22% of the referred patients were referred back to the referring agency for follow up. The Children's Hospital undertook follow up of 35,80% of the patients, though these patients may have been referred back after their next visit to the hospital. 21% did not require any follow up (possibly indicating that the problem for which they were referred was not of a serious nature). It is a problem that referral agencies are not conducting the follow up of their patients. This increases the work load of the hospital unnecessarily, decreases continuity of care and may inconvenience patients in terms of time and cost. Outpatient staff should be encouraged to refer patients back to the referring agencies for follow up visits. The failure to do so is a problem found at most large hospitals[28] and helps to undermine the confidence the population has in primary health care services.

Hospital staff do not make contact with the referring agencies, or if they do so they do not make any record of it in the hospital folder - only 30,30% of all staff replied to the referral agency or made a record of their reply. As the medical officers see the majority of referred patients, the record for their replies to letters - 11,19% - is unacceptably low. The argument that the high patient flow in outpatients

precludes the medical officers from writing letters can not be accepted as valid, though it is a realistic assessment of the problem. The specialist clinics and registrars fared only slightly better than the general trend.

A method of reply to referring agencies must be developed for the hospital staff. There is no valid reason for consultants and registrars not to reply to letters, as the study shows that the majority of referred patients they examine are not acutely ill. The writing of reports to referring agents is influenced by who the referral agent was. This indicates that there may be an 'attitude problem' at the hospital and hospital staff need to develop respect for their colleagues in the community.

c) Diagnoses

The diagnoses made by the referral agents were generally similar to those made at the hospital. The major difference in the neurology group (17,33% of referral diagnoses vs 12,62% of hospital diagnoses) is possibly explained by the higher incidence of presumed meningitis in the referral diagnoses, (20 cases of which only 1 was confirmed). In the general outpatient population respiratory conditions account

for up to 40% of all problems seen[30]. It is thus evident that there is a varying spectrum of diagnoses. This is to be expected as the outpatient department's diagnoses reflects the common illnesses in the community.

The attempt to correlate the two sets of diagnoses by means of a positive predictive value only served to indicate that conditions that have obvious clinical signs will be more readily recognised by the referral agency.

3. WHAT WAS THE QUALITY OF THE REFERRAL LETTER?

The referral letter has been the focus of numerous studies[8, 13,17,31,32]. Marinker et al[8] list the information required in referral letters (modified here for local conditions):

* Identification of patient, i.e. age, date of birth, sex, name
* Statement about the patient's present problem
* Summary of relevant past events, e.g. birth, development, past illnesses and an accurate drug history (treatment)
* Doctor's formulation of the problem

* Doctor's expectation of the referral and the parent's expectation
* A statement of what the parents have been told about the illness and the referral.

The layout of letters[33] can influence the assessment and can result in an underestimation of content. An attempt was made to avoid this by the use of the scoring system as described in the methodology (Chapter 2).

The letters analysed in this study are compared in the table below to two British studies[32,34], albeit to general hospitals.

Table 45 - Comparison of Studies on Referral Letters

	De Alarcon & Hodson[32]	Dowie[34]	This study
	1964	1983	1987
Number of letters	500	358	1143
	%	%	%
History present	44,2	53,0	52,1
Examination adequate	22,4	48,0	45,1
Diagnosis given	40,6	66,0	76,9
Investigations	5,2	53,0	11,8
Treatment reported	7,0-10,0	63,0	28,0

The referral letters in this study compare favourably to those analysed in the other studies. However, the referral letters are deficient in the reporting of treatment given and investigations performed, particularly when compared to Dowie's study[34].

It is thus evident that referral letters do not meet with the standard set out above. Possible reasons for this are the workload of referral agents; the lack of understanding for the need for comprehensive details about the patient; and the lack of contact between the hospital and the referral agent - why write a detailed letter if one does not receive a similar reply?

Illegibile handwriting decreases the response rate[32]. However it would appear that referral agencies that wrote high quality letters improved the response of hospital doctors, but that this response is still unacceptably low.

Dowie[34] interviewed doctors with reference to their referral letters and notes that letter writing is self-taught - some doctors never learn the art of letter writing, some dislike the process and the range of attitudes to letter writing was wide. However, this present study did not investigate this aspect.

4. THE PROBLEMS

a) Is the RCWMCH overloaded with patients who could be managed in the community?

The hospital functions as a combination of all levels of care. The statistics that are routinely collected by the hospital Informatics Department have indicated that over 90% of the patients seen at the hospital are not referred[6]. This has been confirmed in this study. This study has also shown that the referred patients are not all in need of tertiary care and therefore the actual role the hospital is to play in the future needs to be redefined.

It is clear that the hospital cannot isolate itself from the community it serves, and as that community changes so must the role of the hospital. The hospital must continue to provide the expertise that it has developed. However the community needs are far greater than this. Until the health authorities cater for the needs of the new population of Cape Town, The Red Cross War Memorial Children's Hospital will have to bear much of the load.

b) Are patients referred unnecessarily to the hospital?

Data from this study would tend to give credence to this problem. The cause for the unnecessary referrals stems from a number of factors - the lack of facilities and expertise in the community, the desire of patients to be referred to the hospital and the particular behavioural characteristics of the referral agent.

This problem will be difficult to solve. The solution will lie in the role the hospital will play in supporting, supervising and guiding the referral agents. The mixed nature of the health system compounds the problem but a start would be the

appropriate training of health personnel in the field of child health.

c) Do patients bypass the primary health care facilities and present directly to the hospital ?

This issue was not the focus of this study. A review of the data collected at the Department of Medical Informatics at the time of the study would confirm that the outpatients department is used primarily as a primary curative health care facility.[6] It is noted here as any approach to solving the problem of referred patients must take all patients into account. Partial solutions will have no impact and the overall approach must be to determine how the hospital is to serve all the patients that present and how it is to function in the overall health plan for the region.

d) Are the lines of communication between the different health sectors poor?

The study clearly indicated that there is a general lack of communication in both directions. The need for communication is not debatable and possible solutions are given in chapter 7.

e) Is there a defined referral system for the hospital?

Although there is a 'defined' geographical area of service and a 'method' of referral to the hospital, there does not appear to be any co-ordination between the different sectors of health care. This is an area that needs to be explored and must be done in terms of the provision of health for all the children in the region for which the hospital is responsible.

CHAPTER 5 - CONSTRAINTS

The results of the study reflect the referred patient details over a six month period. It was inevitable that certain problems would arise despite the continued surveillance of the collection methods. These constraints are to be borne in mind.

1. Photocopying apparatus

Two photocopiers were in use 24 hours a day at the two collection points for referred patients. On occasions the photocopiers broke down and names were collected rather than letters photocopied. This resulted in some loss of traceable letters. No more than 10 days were affected over the six month period, and none of these days were specified days.

2. Letter collection

The two collection points were chosen as almost all the patients referred to the hospital pass through these points. However the following clinics bypass the two reception areas:

* Developmental Clinic. Patients referred to this clinic are seen at the Rondebosch & Mowbray Cottage Hospital. An attempt was made to collect letters from the reception there. However during the study the clinic moved to new premises, hence collection of letters was not entirely accurate. The clinic sees 12-15 referred patients per week.

* Haematology Clinic. Patients referred to this clinic usually go directly to Ward G1. A book was placed in the clinic to collect the stickers of patients referred to the clinic. However supervision could not be as rigorous as at the main collection points. On checking the data available the number of missed patients was minimal.

* Physiotherapy. Rarely patients would bypass the reception area and go to the physiotherapy department.

* Acute emergencies. Occasionally children with acute emergencies would bypass the reception area and the letter would thus not be photocopied. In most cases the letter was subsequently photocopied.

Letter collection was undertaken by the reception staff. The process became routine and thus there was very little non-compliance with the protocol of collection. However if new staff were on duty it is possible that letters were not collected, particularly if the machinery was in disrepair. Regular checks were made by the researcher and daily visits were made Monday to Friday to the collection points in order to collect the letters and to motivate the reception staff members.

3. Geographical areas

The areas were grouped together in order to facilitate analysis. The grouping that was done thus could mask the characteristics of a particular suburb. However it is possible to go back to the raw data and analyse each suburb individually within a particular grouping.

4. Diagnosis codes

The coding of all diseases was done by the researcher in order to ensure uniformity in diagnosis code allocation. The codes were then grouped and thus individual diseases were not included in the final data. However the data is available from the first data set.

5. Letter analysis

Every attempt was made to ensure consistency in the grading of letters by the criteria. Only the researcher coded the letters so that inter researcher bias did not exist. However, as this occurred over a six month period it is possible that bias does exist within the researcher's analysis of the letter quality. Furthermore there may be an element of subjectivity. However in order to minimise this, random remarking of letters took place on a monthly basis in order to ensure that there was not a deviation in scores. It was found that the coding was consistent.

6. Denominators

It would be desirable to determine referral rates for different agencies and for geographical areas. However the lack of suitable denominators precludes one from determining accurate rates. The 1985 population census is inaccurate and subsequent estimates are incomplete. Further, the determination of denominators for specific agencies is unresolved - does one take number of patients over a period, number of consultations, population of area, etc? This

problem is not unique to this study, as indicated by Marinker et al[8], with reference to referral rates in the United Kingdom.

CHAPTER 6 - CONCLUSIONS

The study of the referral process to the Red Cross War Memorial Children's Hospital has provided data that can be used in future planning of health care services for the population of the region. The hospital cannot be divorced from the community it serves or from the community health care professionals. It is important to constantly analyse the role the hospital plays in the structure of health care provision. The conclusions listed below reflect the composition of the referred patients to the hospital and will enable the hospital administration to reflect on the actual function of the hospital.

1. The patients are demographically similar to the general hospital population, except that there are fewer Black patients than are seen in general outpatients. This implies that the Black population uses the hospital more as a first tier or primary care facility than as a second or third tier facility.

2. The private sector is the major single source of referral to the hospital. There is a wide scatter of sources of referral and no particular area appears to have a higher than expected referral rate. However Black areas have few private sector facilities and thus day hospital referrals predominate in these

areas. General practitioners are otherwise fairly evenly spread out in the sample. The local authority referrals are mainly from City Council clinics. Provincial hospital referrals are predominantly from hospitals in the Cape Town area.

3. Referrals to the hospital were not directed to clinics in a logical manner. Most referrals were to non-specific clinics such as the general outpatients. This indicates that many of the referrals were for services provided by the hospital other than tertiary care services, i.e. X-rays, laboratory procedures, acute treatment, e.g. for diarrhoea or acute respiratory problems. It is possible that referral agents do not know how to refer tp specialist clinics or what facilities are available. Only a minority of referrals were to a specified specialist clinic.

4. Most patients arrived during office hours. However there is a large number (25%) that arrive after hours as 'acute' referrals.

5. The majority of referred patients are seen by medical officers. Most of the patients were sent home and did not require follow up.

6. The contact with referral agencies by hospital doctors is unacceptably low and totally inadequate. The hospital acts as a bottomless pit, swallowing up patients unnecessarily by conducting most of the follow up and not referring back to the referral agencies.

7. The letter analysis indicated that overall letter quality was poor and that this influenced the reply rate. The poor letter quality possibly compromised the assessment of patients.

8. Red Cross War Memorial Children's Hospital functions as a primary health centre for the majority of patients, both referred and otherwise. Only a minority of the referred patients require secondary or tertiary care. This is not entirely problematic - there is a need for a more sophisticated primary care centre such as the Red Cross Children's Hospital Outpatients Department. However there is also a need for a tertiary centre divorced from the primary health care centre.

9. The reasons for referral by referral agencies may reflect a deficiency in the training of health professionals in certain areas of health care, e.g. ear, nose and throat conditions, ophthalmology and

dermatology. Increased attention may be necessary in the diagnosis of common disorders in these fields.

10. It is difficult to compare this study to studies undertaken in the United Kingdom or elsewhere. However the results are not different from other descriptions of referral patterns to 'academic' hospitals elsewhere.[28,29]

11 A study of individual agencies, particularly general practitioners, would help to determine referral rates, perceptions about need for referral and type of intervention desired and required and allow for comparisons to be made to referral rates in other countries. This study has examined referral patterns from the perspective of the hospital. A community based study is thus the next step in any ongoing research.

CHAPTER 7 - RECOMMENDATIONS

The following are therefore recommended:

1. It is essential for the hospital administration in conjunction with the academic Department of Paediatrics and Child Health to delineate clear-cut objectives for the Outpatients Department. These could be similar to those described by Forsyth and Logan[35] adapted for local conditions, i.e.:

   * Curative primary health care - this is the major role of the Outpatients Department
   * Screening patients for admission, i.e. secondary care
   * Easing the load on the primary health care providers - but not taking over the load
   * Providing outpatient tertiary care for patients with complex illnesses, e.g. heart lesions, congenital abnormalities. This occurs in the specialist clinics.
   * Providing services not available in the community, e.g. laboratory facilities, X-rays, EEGs, procedures such as lumbar punctures
   * Providing a model of care for ill patients.

Once the actual role of the Outpatients Department has been delineated, the streamlining of its functions can take place.

2. The hospital should establish a public relations department which would aim at:

* Informing referral agencies of outpatient clinics
* Send updated reports to the referral agencies of any changes in outpatient details
* Handle queries from referral agencies
* Computerise the booking system for the outpatient department with a central booking office that has a separate telephone number and so ease the booking procedure for referral agencies
* Provide guidelines for each referral agency as to when to refer.

3. The hospital outpatient clinics should draw up guidelines for referral agencies as to the services they offer. These should be supplied to the Public Relations Department. It should be pointed out to referring agencies that the hospital outpatient department is not a specialist department and therefore referrals should be made in order to obtain the maximum benefit for the patients.

4. All referral agencies should be given details of hospital clinic times, how to make bookings, what should be done prior to referrals, particularly for non-acute referrals. The organisation of the clinic details should be drawn up by each clinic according to guidelines determined by the public relations department of the hospital.

5. Intervention must be aimed at the referral agencies at the following points:

   * General practitioners via the Academy of Family Practice, the Medical Association of South Africa and the National Medical and Dental Association.

   * Local authorities via the Medical Officer of Health of Cape Town City Council and the Regional Services Council of the Western Cape, and all the local authorities in the Western Cape.

   * Day hospitals via the relevant superintendents.

   Intervention should include the information under points 1 to 3 and continuing medical education programmes. Furthermore studies to determine accurate referral rates should be encouraged.

6. All hospital doctors should be required to stamp their names in the notes - this should be a hospital admission requirement. To facilitate this, all doctors should be provided with a name stamp by the hospital administration. During the folder review it was at times difficult to identify doctors.

7. An attempt must be made to improve the reply rate of hospital doctors to referral agencies.

* A hospital letter form could be made indicating the following:

  + name of doctor with telephone extension number
  + hospital sticker (name, sex/race and date of birth)
  + hospital diagnosis
  + pertinent features on history and examination
  + investigation results and when and where to phone for results
  + treatment given
  + follow up recommendations

* The ward clerk for outpatients should be involved in the processing of referral letters.

8. All unbooked referrals should be screened by a medical officer in outpatients. Criteria need to be developed as to which referrals should be seen by the consultant on duty for outpatients, e.g. complex chronic problems. Other referrals should be seen by medical officer outpatient doctors as part of normal duties. The consultant on duty for outpatients should be available for consultation by medical officers in outpatients as he/she will not be overloaded with inappropriate referrals.

   Patients who are acutely ill should be seen by the medical officer on duty for acute emergencies. Should the medical officer require a consultant's opinion then a patient should be referred to the consultant on duty for Outpatients.

9. A study of the patients who utilise the hospital as a primary care hospital should be undertaken in order to ascertain their characteristics. This would facilitate the reorganisation of the Children's Hospital.

10. An attempt should be made to intervene in certain areas to decrease the number of referrals. The Child Health Outreach Project[36] has made an initial attempt to decrease the number of referrals by establishing clinics at the Mitchells Plain Day Hospital. However

the Mitchells Plain community study[27] has shown that only 16% of children in Mitchells Plain attend the day hospital. Hence it is important to intervene in the private sector in order to decrease the number of referrals to the Children's Hospital.

11. Further research is required to delineate the following:

* Referral rates of various agencies, particularly general practitioners
* Perceptions about the role of the hospital and of referrals
* Patients' attitudes to the hospital and to referrals
* Evaluation of intervention programmes should they be implemented.
* The process of referral decision making, i.e. how does the doctor/sister arrive at the decision to refer a patient to hospital?
* Letter writing should be an integral part of the medical students' training. It may be problematic for hospital based doctors to teach this skill, but the education authorities should introduce a writing skills course into the curriculum.

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APPENDIX 1

DEFINITIONS

Primary Care[1,3,4,20]	Primary health care includes: * education concerning health problems * provision of sanitation and clean water supply * maternal and child care * immunisation * prevention of locally endemic diseases * contact with health facilities be it private practitioner, clinic or hospital.
Secondary Care[1,3,4,20]	This includes: the first level of referral to hospital e.g. referral for care of acutely ill patients who require short term admission. the second level of referral hospital providing a more specialist level of medical care.

Tertiary Care[1,3,4,20]	Super-specialist level of medical practice in teaching hospital situations -i.e. the third referral level of hospital care.
Child	Defined as being under the age of 14 years.
MOPD	Medical Outpatients Department at which children who have medical conditions are managed.
SOPD	Surgical Outpatients Department at which children who have surgical conditions are managed.
Specialist	A medical doctor registered on the South African Medical and Dental Council Specialist Register of any medical or surgical speciality.

Day Hospital	A community based primary curative care clinic staffed by doctors and sisters. These are located in different areas of the Cape Peninsula.
Provincial Hospital	A regional hospital providing primary and secondary curative care.
Local Authority	Health authority providing primary preventive care, e.g. immunisation and Well Baby clinics. Examples: Cape Town City Council, Regional Services Council of the Western Cape. Also provides curative care, e.g. tuberculosis medication.
Midwife Obstetric Unit	This is a community based obstetric unit run by midwives under the supervision of the Department of Obstetrics and Gynaecology at Groote Schuur Hospital.

Positive Predictive Value	The positive predictive value is "the proportion of patients with a positive test result who have the target disorder"[37]. In this setting the positive predictive value refers to the proportion of referral diagnoses that match the hospital diagnoses ('the gold standard'), i.e. it refers to the predictive value of the referral diagnosis.

APPENDIX 2

PILOT STUDY - JACOBS M, ROUX P, DELPORT S[21]

Conducted July 1986 for one week in MOPD during office hours. 140 letters were collected. Data was analysed manually. The major findings were as follows:

	Number	%
Age		
0 - < 1 month	11	7,9
1 - 12 months	38	27,1
> 12 - 60 months	56	40,0
> 60 months	35	25,0
Referral Agency		
GP	58	41,4
Day Hospital	31	22,2
Local Authority	24	17,1
Provincial Hospital	18	12,9
Other	9	6,4
Who Was Consulted		
MOPD	51	36,4
SOPD	27	19,3
Special Clinic	44	31,5
Consultant	15	18,7
EEG	3	2,1
Outcome		
Admitted	14	10,0
Home	126	90,0

The above data is compatible with results in this study.

APPENDIX 3 - SELECTED DAYS

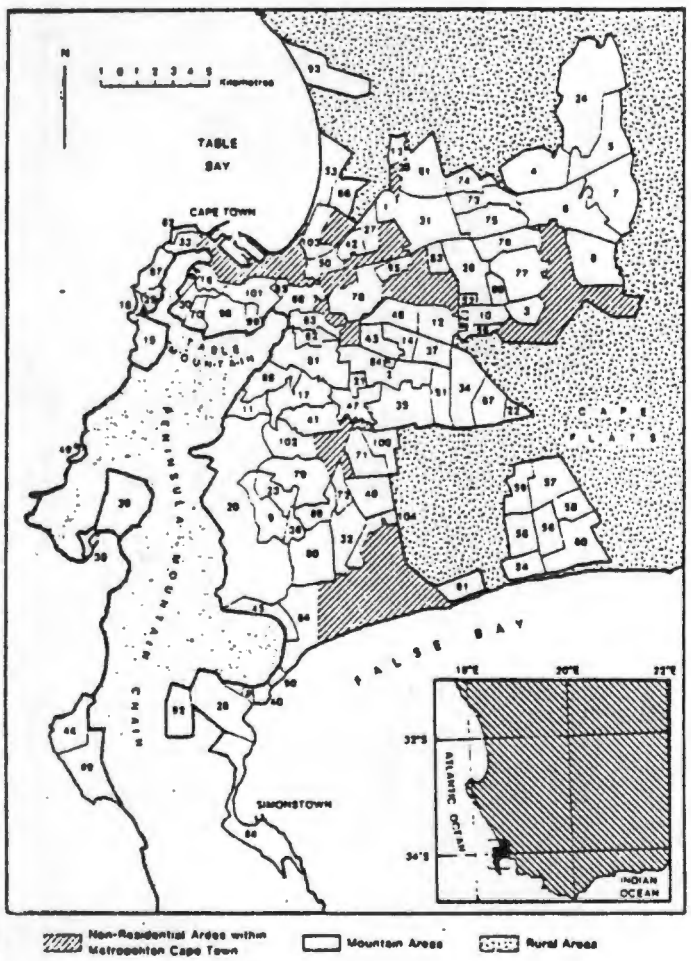
The days selected for analysis of the letters were chosen by the Medical Research Council statistician to be representative of the six month period 1st July to 31st December 1987.

The days were as follows:

July	Friday 3rd	
	Sunday 12th	
	Wednesday 15th	
	Monday 27th	
August	Thursday 6th	
	Sunday 9th	
	Tuesday 18th	
	Friday 28th	
September	Saturday 5th	
	Wednesday 9th	
	Monday 21st	
October	Thursday 1st	
	Saturday 10th	(Public holiday)
	Tuesday 13th	
	Friday 26th	
November	Wednesday 4th	
	Sunday 8th	
	Monday 16th	
	Thursday 26th	
December	Sunday 6th	
	Tuesday 8th	
	Monday 21st	
	Sunday 27th	

APPENDIX 4

MAP OF METROPOLITAN CAPE TOWN[22]



Suburb No.	Suburb/area name
1	Acacia Park
2	Athlone
3	Belhar
4	Bellville North 1
5	Bellville North 2
6	Bellville Central
7	Bellville East
8	Bellville South
9	Bergvliet
10	Bishop Lavis
11	Bishopscourt
12	Bonteheuwel
13	Bothasig
14	Bridgetown
15	Camps Bay
16	Cape Town
17	Claremont
18	Clifton
19	Clovelly
20	Constantia & Tokai
21	Crawford
22	Crossroads
23	Diep River
24	Durbanville
25	Edgemead
26	Elsies River
27	Factreton
28	Fish Hoek
29	Fresnaye
30	Gardens
31	Goodwood
32	Grassy Park
33	Green Point
34	Guguletu
35	Hanover Park

Suburb No.	Suburb/area name
36	Heathfield
37	Heideveld
38	Hout Bay Harbour
39	Hout Bay
40	Kalk Bay
41	Kenilworth
42	Kensington
43	Kewtown
44	Kommetjie
45	Lakeside
46	Langa
47	Lansdowne
48	Lotus River
49	Llandudno
50	Maitland
51	Mannenberg
52	Matroosfontein
53	Milnerton
	Mitchell's Plain:
	54 Rocklands
	55 Westridge
	56 Portlands
	57 Lentegeur
	58 Beacon Valley
	59 Woodlands
	60 Eastridge & Tafelsig
61	Monte Vista
62	Mouille Point
63	Mowbray
64	Muizenberg
65	Newlands
66	Nooitgedacht
67	Nyanga
68	Observatory
69	Ocean View
70	Oranjezicht

Suburb No.	Suburb area name
71	Ottery
72	Parkwood
73	Parow North 1
74	Parow North 2
75	Parow Central
76	Parow South 1
77	Parow South 2
78	Pinelands
79	Plumstead
80	Retreat
81	Rondebosch
82	Rosebank
83	Ruyterwacht
84	Rylands
85	Salt River
86	Sanddrift
87	Sea Point
88	Simonstown
89	Southfield
90	St James
91	Strandfontein
92	Sun Valley
93	Table View
94	Tamboerskloof
95	Thornton
96	Uitsig
97	Valhalla Park
98	Vredehoek
99	Walmer
100	Wetton
101	Woodstock
102	Wynberg
103	Ysterplaat
104	Zeekoevlei

APPENDIX 5

FINAL SUBURB GROUPINGS

A: Bellville North 1, North 2, Central, East, South, Durbanville, Parow North 1, North 2, Central, South 1, South 2

B: Elsies River, Matroosfontein, Belhar, Bishop Lavis, Nooitgedacht, Uitsig, Valhalla Park, Ruyterwacht, Goodwood, Monte Vista

C: Acacia Park, Factreton, Kensington, Maitland

D: Ysterplaat, Milnerton, Sandrift, Table View, Bothasig, Edgemead

E: Hout Bay, Camps Bay, Clifton, Fresnaye, Green Point, Llandudno, Mouille Point, Sea Point, Kommetjie, Ocean View

F: Cape Town, Gardens, Oranjezicht, Tamboerskloof, Vredehoek, Woodstock, Salt River, Walmer

G: Bishopscourt, Claremont, Constantia, Tokai, Kenilworth, Mowbray, Newlands, Observatory, Pinelands, Rondebosch, Rosebank, Thornton

H: Athlone, Bridgetown, Crawford, Kewtown, Rylands

I: Langa

J: Heideveld, Bonteheuwel

K: Crossroads, Nyanga, Guguletu

L: Hanover Park, Lansdowne, Manenberg

M: Lotus River, Parkwood, Wetton, Ottery

N: Clovelly, Fish Hoek, Kalk Bay, Lakeside, Muizenberg, Diep River, Simons Town, Sun Valley, St James, Bergvliet, Wynberg, Plumstead, Constantia, Tokai

O: Grassy Park, Zeekoevlei, Heathfield, Retreat, Southfield

P: Strandfontein, Rocklands, Westridge, Woodlands, Portlands, Eastridge, Tafelsig, Beacon Valley, Lentegeur

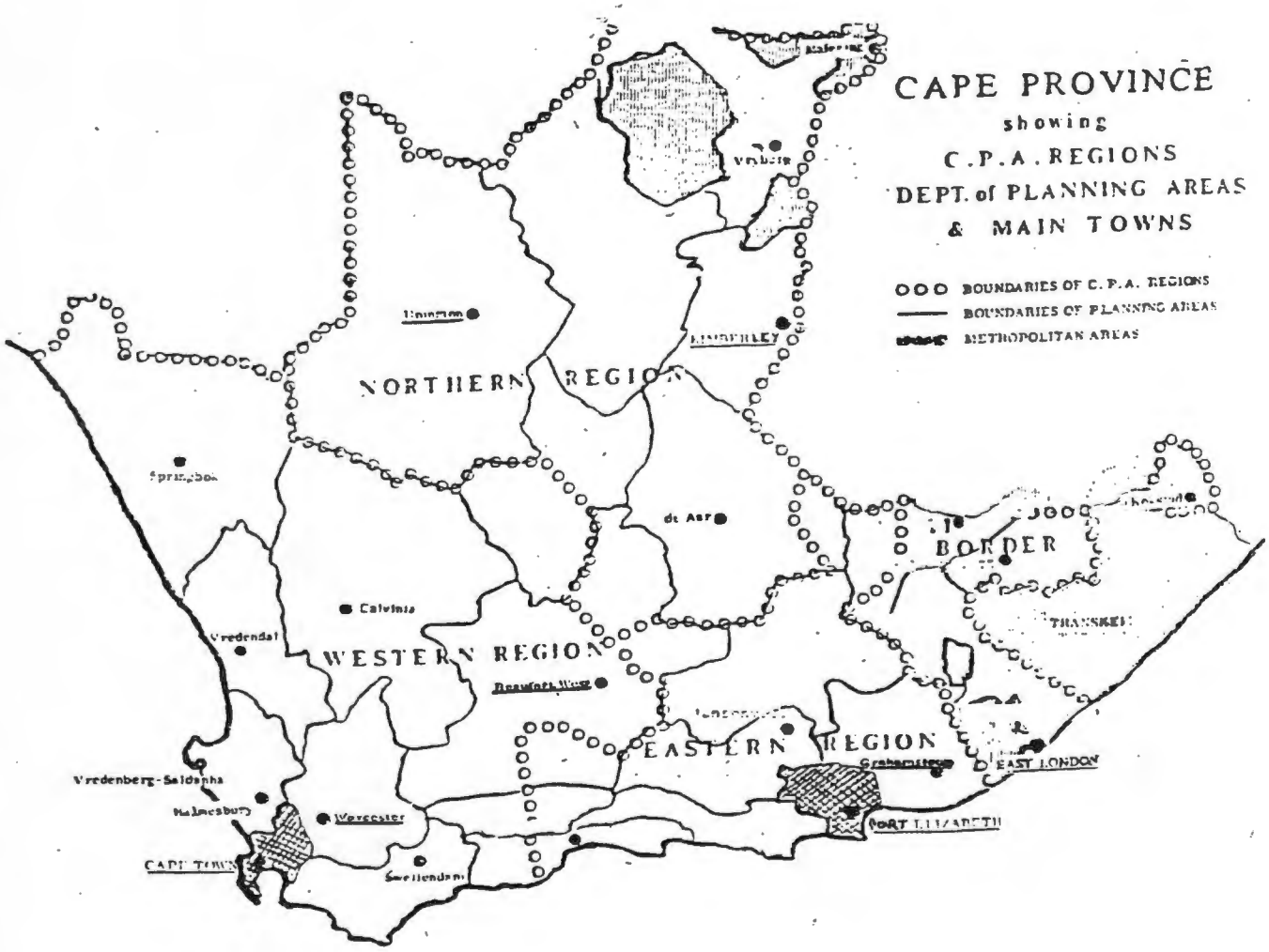
Q: Khayelitsha

R: Worcester, Paarl, Atlantis, Stellenbosch, Eersterivier, Macassar, Somerset West, Kraaifontein

S: All other codes 201-227

APPENDIX 6

MAP OF CAPE PROVINCE[5]



APPENDIX 7

AREAS OUTSIDE CAPE TOWN

201 = Springbok
202 = Vredendal
203 = Vredenburg
204 = Worcester
205 = Caledon
206 = George
207 = Oudtshoorn
208 = Humansdorp
209 = Jansenville
210 = Grahamstown
211 = Queenstown
212 = Cradock
213 = Beaufort West
214 = Calvinia
215 = De Aar
216 = Prieska
217 = Upington
218 = Kuruman
219 = Kimberely
220 = Border
221 = King William's Town
222 = Vryburg
223 = Transvaal
224 = Kokstad
225 = Durban
226 = Bloemfontein
227 = South West Africa

These areas include towns and surrounding rural areas.

APPENDIX 8

GROUPED DIAGNOSIS CODES[23,24]

1. Respiratory infections:

Upper:	461.8, 461.9, 463.0, 464.2, 464.4, 786.1
Lower:	466.0, 466.1, 480.9, 481.0, 485.0, 486.0, 491.0, 494.0, 496.0, 512.8, 513.0, 786.3, 786.5

2. Allergy:

Asthma:	493.0, 493.1
Other:	477.9, 478.0, 515.0, 995.3

3. Alimentary:

Diarrhoeal disease:	004.9, 005.9, 007.1, 009.1, 009.2, 558.9, 787.0
Liver:	070.1, 070.3, 070.9, 573.9, 789.1, 789.3, 789.5
Parasites:	127.0, 127.9
Surgical:	530.1, 540.0, 540.9, 550.9, 553.0, 560.9, 564.0, 569.3, 576.2, 577.0, 578.0, 578.1, 578.9, 750.5, 751.2, 751.4, 751.6, 752.5, 789.0
Mouth:	521.0, 522.5, 523.0
Other:	289.2, 564.1, 779.3

4. Neurological:

Infection:	036.0, 047.9, 320.9
Epilepsy:	345.0, 345.1, 345.3, 345.4, 779.0, 780.3
Development:	315.9, 342.9, 343.4, 343.9, 344.8
Behavioural:	788.3, 298.9, 300.10, 307.0, 307.2, 307.52, 397.6, 307.7, 312.8, 313.9, 314.01, 786.9, V71.0
Neoplasm:	191.2, 214.9
Other:	02.34, 348.2, 348.3, 351.0, 351.8, 354.1, 357.0, 432.9, 742.3, 780.0, 780.2, 781.0, 781.2, 781.3, 784.0, 784.5

5. Genito urinary:

UTI:	599.0
Nephritis:	580.9, 581.9, 582.9
Other:	283.1, 584.9, 599.7, 753.1
Urology:	603.9, 605.0, 607.1, 608.2, 752.6
Gynae:	611.72, 614.2, 620.2, 623.8, 624.4

6. Cardiovascular:

Congenital:	387.0, 745.2, 745.4, 754.6
Rheumatic fever:	390.0, 391.1
Other:	401.10, 422.90, 428.0, 429.3, 746.9, 785.2

7. Haematology & Oncology:

189.0, 280.1, 285.9

8. Nutrition:

260.0, 261.0, 262.0, 268.0, 278.0, 783.1, 783.0, 783.3, 783.4

9. Infectious Diseases:

Tuberculosis:	011.0, 013.12, 017.2, 018.0, V01.1
Other:	038.9, 045.1, 052.9, 053.2, 053.9, 054.2, 055.9, 056.9, 057.9, 079.9, 090
Non-Specific:	289.2, 289.3, 780.6
Surgical:	680.9, 681.01, 682.9, 683.0

10. Trauma:

Fractures:	813.17, 767.2, 810.0, 813.41, 813.08, 821.0, 822.0, 802.0, 767.3, 813.08, 804.0, 815.0, 829.0, 831.0
Head Injury:	850.9, 854.0, 910.0
Foreign Body:	931.0, 930.0, 938.0, 932.0, 933.1, 939.9, 919.6, 938.0, 933.0
Burn:	949.0
Other:	959.5, 686.9, 879.8, 891.0, 919.8, 929.8, 959.4, 959.9, 994.1, 995.1, 995.5
Poisoning:	964.0, 967.9, 981.0, 983.2, 864.4

11. Ophthalmology:

375.2, 362.2, 364.0, 364.41, 367.1, 369.0, 371.0, 372.0, 373.11, 373.2, 374.3, 376.3, 377.1, 378.0, 378.10, 378.8, 379.5, 743.1, 743.30, 743.61, 771.6, 921.9

12. Dermatology:

078.1, 110.0, 111.0, 112.0, 112.3, 133.0, 216.9, 270.2, 684.0, 685.1, 686.9, 691.0, 691.8, 692.9, 696.1, 696.5, 704.0, 707.8, 707.9, 708.0, 709.0, 771.7, 782.2, M913. M9212.01

13. Metabolic:

251.2, 276.5, 272.2, 774.6, 782.3, 782.4

14. E.N.T.:

784.7, 381.0, 382.0, 382.01, 382.9, 383.0, 385.3, 388.60, 389.9, 471.9, 4774.12, 475.0, 527.0, 527.2, 527.6, 527.9, 748.0, 749.0, 749.1, 749.2, 750.0

15. Collagen:

443.0

16. Orthopaedic:

711.0, 719.4, 719.7, 726.9, 728.0, 729.8, 730.0, 733.9, 735.4, 736.6, 736.7, 736.89, 737.30, 755,64, 786.89

17. Genetic:

754.30, 754.70, 755.01, 755.2, 755.3, 755.5, 756.3, 758.0 759.8, 760.71, 771.1

Other:

744.41, 744.46, 767.1

18. Service:

87.49, 89.14, 89.52, 95.41

19. Normal:

V20.1, V67.0

APPENDIX 9

ICD9 CODES[23,24]

NOS = Not specified

ICD9CM	DESCRIPTION[18]
682,9	Abscess/Cellulitis
789,3	Abdominal Mass NOS
789,0	Abdominal Pain Unspecified
781,2	Abnormal Gait
756,3	Abnormality
522,5	Abscess Dental
475,0	Abscess Peritonsillar
681,01	Abscess Pulp
755,2	Absent Hand
474,12	Adenoidal Hypertrophy
270,2	Albanism
477,9	Allergic Rhinitis
708,0	Allergic Urticaria
995,3	Allergy NOS
704,0	Alopecia
285,9	Anemia NOS
879,8	Animal Bite
751,2	Ano-Rectal Malformation
540,9	Appendicitis Acute Without Peritonitis
540,0	Appendicitis/Peritonitis
719,4	Arthralgia
711,0	Arthritis : Septic
127,0	Ascariasis NOS
789,5	Ascites
933,0	Aspiration
493,0	Asthma Extrinsic
493,1	Asthma Intrinsic
781,3	Ataxia
781,0	Athetosis
515,0	Atopy
754,6	Atrioventricular Malformation
95,41	Audiometry Service
607,1	Balanitis
995,5	Battered Baby Syndrome
707,8	Bed Sore
V71,0	Behaviour Problem
351,0	Bells Palsy
751,6	Biliary Atresia
576,2	Biliary Atresia Post Natal
569,3	Bleed PR
623,8	Bleed PV
369,00	Blind
558,9	Bloody Stools
680,9	Boil
755,64	Bow Legs
191,2	Brain Stem Glioma

744,2	Branchial Cyst
611,72	Breast Lump
312,8	Breathholding
494,0	Bronchiectasis
466,1	Bronchiolitis
466,0	Bronchitis
485,0	Bronchopneumonia
949,0	Burn Unspecified
112,0	Candida Oral
112,3	Candida Skin
M9131	Capillary Haemangioma
746,9	Cardiac Disease NOS
429,3	Cardiomegaly
521,0	Caries Dental
743,30	Cataract
344,8	Cauda Equina Syndrome
682,9	Cellulitis NOS
767,1	Cephalhaematoma
343,9	Cerebral Palsy
289,3	Cervical Lymph Nodes Not Tuberculosis
017,2	Cervical Lymph Nodes Tuberculosis
373,2	Chalazion (Meibomian Cyst)
491,0	Chest Infection Recurrent
786,50	Chest Pain
052,9	Chicken Pox
995,5	Child Abuse
748,0	Choanalatresia
496,0	Chronic Obstructive Airways Disease
755,5	Claw Hand
749,10	Cleft Lip
749,00	Cleft Palate
749,20	Cleft Palate and Lip
754,70	Clubfoot
780,0	Coma
850,9	Concussion
771,1	Congenital Cytomegalovirus
754,30	Congenital Dislocation of Hip
428,0	Congestive Cardiac Failure
372,00	Conjunctivitis Acute NOS
564,0	Constipation
560,9	Constriction Band
371,00	Corneal Scarring
759,8	Cornelia De Lange
E864,4	Corrosive Caustic or Chemical Ingestion
464,4	Croup
879,8	Cut or Laceration Unspecified
389,9	Deaf NOS
276,5	Dehydration
783,4	Delayed Development
692,9	Dermatitis
691,8	Dermatitis Seborrhoeic
216,9	Dermoid Cyst
315,9	Developmental Delay
009,0	Diarrhoea Acute

558,9	Diarrhoea Chronic
009,2	Diarrhoea Infectious
758,0	Down's Trisomy 21
004,9	Dysentery
89,52	ECG Service
752,5	Ectopic Testis
691,8	Eczema Infantile
89,14	EEG Service
313,9	Emotional Upset
307,7	Encopresis
387,6	Encopresis Unspecified
348,3	Encephalopathy
307,6	Enuresis
788,3	Enuresis Unspecified
345,1	Epilepsy Grand Mal
345,0	Epilepsy Petit Mal
345,4	Epilepsy Temporal Lobe
375,2	Epiphoria
784,7	Epistaxis
726,9	Exostosis
921,9	Eye Injury
930,9	Eye : Foreign Body
351,8	Facial Spasm
745,2	Fallots Tetralogy
272,2	Fat Necrosis
780,3	Febrile Convulsion
783,3	Feeding Problem
760,71	Fetal Alcohol Syndrome
780,6	Fever
686,9	Finger Infection
959,5	Finger Injury
V67,0	Follow Up Examination
931,0	Foreign Body Ear
930,0	Foreign Body Eye
938,0	Foreign Body GIT
932	Foreign Body Nose
933,1	Foreign Body Inhaled NOS
939,9	Foreign Body NOS
919,6	Foreign Body Skin
938,0	Foreign Body Swallowed NOS
813,17	Fracture Arm
767,2	Fracture Clavicle
810,0	Fracture Clavicle
813,41	Fracture Colleys
813,08	Fracture Elbow
821,0	Fracture Femur
822,0	Fracture Knee
802,0	Fracture Nose
767,3	Fracture Other Bones
813,08	Fracture Radius
804,0	Fracture Skull
815,0	Fracture Thumb
829,0	Fracture Unspecified
783,1	Failure To Thrive

781,2	Gait : Abnormal
009,0	Gastro-Enteritis
009,2	Gastro-Enteritis Infectious
530,1	Gastro-Oesophageal Reflux
578,9	Gastro-Intestinal Haemorrhage NOS
007,1	Giardiasis
307,2	Gilles de la Tourette Disease
523,0	Gingivitis Acute
580,9	Glomerulonephritis
582,9	Glomerulonephritis Chronic
357,0	Guillain Barre Syndrome
M92120	Haemangioma NOS
577,0	Haematemasis
599,7	Haematuria
786,3	Haemoptysis
735,4	Hammer Finger
959,4	Hand Injury
910,0	Head Injury
854,0	Head Injury NOS
784,0	Headache
V20,1	Healthy Infant
785,2	Heart Murmur
578,0	Hematemesis
342,9	Hemiplegia
283,1	Hemolytic Uremic Syndrome
070,1	Hepatitis A
070,3	Hepatitis B
070,9	Hepatitis NOS
789,1	Hepatomegaly
553,00	Hernia Femoral
550,9	Hernia Inguinal
553,1	Hernia Umbilical and Para
054,2	Herpes Simplex Stomatitis
053,2	Herpes Zoster Eye
053,9	Herpes Zoster NOS
754,30	Hip : Congenital Dislocation
742,3	Hydrocephalus : Congenital
603,9	Hydrocoele NOS
314,01	Hyperactive
401,0	Hypertension
364,41	Hyphaema
252,2	Hypoglycemia
752,6	Hypospadias
781,3	Hypotonia
300,10	Hysteria
684,0	Impetigo
771,6	Infant Conjunctivitis
771,7	Infant Thrush
343,4	Infant Hemiplegia
599,0	Infection : Urinary Tract
959,9	Injury NOS
560,9	Intestinal Obstruction
432,9	Intracranial Haemorrhage
364,0	Iris Naevus

280,1	Iron Deficiency Anemia
564,1	Irritable Colon
774,6	Jaundice NOS : Neonatal
782,4	Jaundice NOS : Not Neonatal
719,4	Joint Painful
755,64	Knock Knees/Bow Legs
260,0	Kwashiorkor
624,4	Labia Adherant
891,0	Laceration Knee
921,9	Laceration Eye
879,8	Laceration or Wound : Unspecified
375,2	Lacrimal duct Blocked
464,2	Laryngotracheitis
214,9	Lipoma
573,9	Liver : Mass NOS
783,0	Loss of Appetite
611,72	Lump Breast
513,0	Lung Abscess
683,0	Lymphadenitis Acute
785,6	Lymnphadenopathy NOS
289,2	Lymphadenopathy Reactive
751,4	Malrotation : Midgut
307,0	Mannerism
261,0	Marasmus
573,9	Mass : Liver NOS
383,0	Mastoiditis Acute
055,9	Measles
354,1	Median Nerve Palsy
578,1	Melaena
047,9	Meningitis Aseptic/NOS
320,9	Meningitis Unspec. Bact
036,0	Meningococcal Meningitis
789,2	Mesenteric Adenitis
289,2	Mesenteric Lymphadenitis NOS
743,1	Microopthalmia
422,90	Myocarditis
367,1	Myopia
728,0	Myositis
691,0	Napkin Rash
478,0	Nasal Mucosal oedema
471,9	Nasal Polyp
787,0	Nausea and Vomiting
994,1	Near Drowning
910,0	Neck Injury
779,0	Neonatal Convulsion
779,3	Neonatal Feeding Problem
581,9	Nephrotic Syndrome
784,7	Nose : Bleed
379,50	Nystagmus
278,0	Obesity
782,3	Oedema
935,1	Oesophagus : Foreign Body
377,1	Optic Atrophy
730,0	Osteitis Acute

733,9	Osteopenia
381,00	Otitis Media
382,9	Otitis Media NOS
388,60	Otorrhoea NOS
736,7	Outtoeing
614,2	Ovarian Abscess
749,1	Palate High Arched
461,8	Pansinusitis
605,0	Paraphimosis
553,1	Paraumbilical Hernia
527,2	Parotid Duct Blocked
527,0	Parotid Swelling
527,9	Parotid Swelling NOS
262,0	Protein Energy Malnutrition Less Than 60th
033,9	Pertussis
605,0	Phimosis
307,52	Pica (Not Organic)
685,1	Pilonidal Sinus
696,5	Pityriasis Sicca Alba
481,0	Pneumonia Lobar
486,0	Pneumonia Unspecified
480,9	Pneumonia Viral
512,8	Pneumothorax
981,0	Poisoning - Petroleum Product
983,2	Poisoning - Caustic Fluids
964,0	Poisoning - Iron
967,9	Poisoning - Sedative NOS
005,9	Poisoning - Food
045,1	Poliomyelitis
755,01	Polydactaly
385,3	Polyp - Ear
376,3	Proptosis
378,8	Pseudo Squint
696,1	Psoriasis
298,9	Psychosis
743,30	Ptosis
750,5	Pyloric Stenosis
780,6	Pyrexia of Unknown Origin
348,2	Raised Intracranial Pressure
782,1	Rash NOS
443,0	Raynaud Disease
753,1	Renal Cyst
584,9	Renal Failure Acute
620,2	Retention Cyst
362,2	Retrolental Fibroplasia
391,1	Rheumatic Endocarditis
390,0	Rheumatic Fever Acute
756,3	Rib Abnormality
268,0	Rickets
87,49	Routine Chest X-Ray Service
056,9	Rubella
133,0	Scabies
737,30	Scoliosis/Kyphosis
038,9	Septicemia NOS

995,1	Sex Abuse
755,3	Short Leg
831,0	Shoulder Dislocated
744,41	Sinus Branchial
744,46	Sinus or Fistula : Preauricular
461,9	Sinusitis : Acute Unspecified
919,6	Skin : Foreign Body
686,9	Skin : Infection Locally NOS
784,5	Speech Problem
378,00	Squint Convergent
378,10	Squint Divergent
345,3	Status Epilepticus Grand Mal
786,1	Stridor
373,11	Stye
782,2	Subcutaneous Nodules
527,6	Submucous Cyst
382,00	Suppurative Otitis Media
382,01	Suppurative Otitis Media With Perforation
938,0	Swallowed Coin
729,8	Swelling Arm
929,8	Swollen Arm
785,6	Swollen Glands
780,2	Syncope
090,9	Syphilis Congenital
253,0	Tall Stature

APPENDIX 10

CODE FOR CLINICS

01	Allergy	02	Ano-Rectal
03	Behaviour	04	Burns
05	Cardiac	06	Dentist
07	Dermatology Assessment	08	Developmental
09	EEG	10	Endocrine
11	ENT	12	Eyes
13	Fracture	14	Gastroenterology
15	Genetic	16	Gynaecology
17	Haematology	18	Lipid
19	Meningomyelocoele	20	Muscle Clinic
21	Neonatal Jaundice	22	Nephrotic
23	Neurology	24	Neurosurgical
25	Orthodontist	26	Orthopaedic
27	Osteitis	28	Physiotherapy
29	Plastics	30	Renal
31	Respiratory	32	Rheumatic
33	Speech Therapy	35	Thoracic
36	Urology	37	CT Scan
38	Occupational Therapy	39	Chemical Pathology
40	X-Ray	41	Hand Clinic
42	Poison Information Centre	43	Gastro Oesophageal Reflux
44	Social Worker		

APPENDIX 11

CODING SHEET

LETTER REVIEW

a. BASIC DATA

Name:

Hospital ID No: 1-8

Date of Birth: 9-14

Date of Referral: 15-20

Time of Presentation: 27-30

Sex: 1 = W Male 2 = W Female 31
3 = C Male 4 = C Female
7 = B Male 8 = B Female

Known patient = 1 Unknown patient = 2 32

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b. REFERRING AGENCY

1 = Private G.P. 2 = Private specialist 33
3 = Day hospital 4 = Provincial hospital
5 = Local authority 6 = Other
Specify

---

c. GEOGRAPHICAL AREA OF RESIDENCE 34-36

Metropolitan Cape Town
- Code suburb as per Appendix 2
Country place
- Code district as per Appendix 3
Specify town

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d. GEOGRAPHICAL AREA OF REFERRAL AGENCY 37-39

Metropolitan Cape Town
- Code suburb as per Appendix 2
Country place
- Code district as per Appendix 3
Specify town

---

e. REFERRED TO 40

1 = MOPD
2 = SOPD
3 = Medical registrar
4 = Specialist clinic: Specify 41-42
5 = Neonatal jaundice service
6 = Not specified
7 = Other: Specify

Specialist service: Code by WHO procedure classification 43-48
Specify:

---

a. OUTCOME OF CONSULTATION 49

1 = Home
2 = Ward A.8 (overnight ward)
3 = Ward A.8 then hospital admission within 72 hours
4 = Ward A.9 (diarrhoeal disease ward)
5 = Ward A.9 then hospital admission
6 = Direct to medical ward in hospital
7 = I.C.U. admission
8 = Surgical admission
9 = Trauma unit

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b. FOLLOW UP 50

1 = Not required
2 = Red Cross Hospital clinic
3 = Referral agency
4 = Other health agency
5 = No evidence of follow-up management
6 = Other: Specify

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c. HOSPITAL CONTACT WITH REFERRAL AGENCY

1 = Contact 2 = No record 51

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d. PERSON CONSULTED

1 = Medical officer
2 = Registrar
3 = Consultant
4 = Technician
5 = Other Specify: 52

MEDICAL REVIEW

a. REFERRAL DIAGNOSIS

Code as per ICD 9	53-57
Not codeable = 00000	
No diagnosis recorded = 99999	

---

b. LETTER GRADING

1 = Present 2 = Absent 3 = Incomplete	
History	58
Examination	59
Diagnosis	60
Investigations	61
Treatment	62

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c. HOSPITAL DIAGNOSIS

Code as per ICD 9	63-67
Not codeable = 00000	
No diagnosis recorded = 99999	
